BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1 Note remarks : MB 14,7 d 8 : 28.06.89 Test sheet Edition Replaces Test oil : ISO-4113 Phasing : 0-45-90-135-180-225-Combination no. 270-315 : 0 401 848 804 Injection pump Pump designation : PE8P110A320LS3842-1 Time to cyl. no. : 8 : 0 411 818 716 EP type number BASIC SETTING Governor Governor design. : RQV350..1050PA378-7 : 0 421 813 714 rpm: 750 Governer no. 1st speed Rack travel in mm : 12.70...12.80 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 12.4...12.6 : 0M442 Engine 100 s: (12.1...12.8) : 213.0 : 2100 1st version kW cm3 : 0.4Rated speed Spread TEST BENCH REQUIREMENTS 100 s: (0.7) Test oil 2nd speed rpm : 350.0 inlet temp. , C : 38...42 Rack travel in mm: 8.0...8.3 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) Spread cm3: 0.4 100 s: (0.7) Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump Overflow with governor quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL rpm : 300 Test nozzle holder 1st speed : 0 681 343 009 : 1.50...1.70 assembly travel mm rpm : 800 2nd speed : 4.90...5.30 rpm : <u>1</u>100 travel mm Opening : 172...175 pressure, bar 3rd speed : 7.90...8.50 travel mm rpm : 1150 4th speed : 8.90...9.70 Test lines : 1 680 750 015 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness Control-lever position : 6.00X1.50X600 Degree: -1 x Length mm Speed rpm : 1110 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 124.0...128.5)

A01

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

cm3 : 4.00Spread 1000 : (7.00)RATED SPEED 1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 11.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm : 250 Minimum rack trave: 9.50 Speed rpm : 350 CONSTANT REGULATION Speed

Rack travel in mm : 8.00...8.30

rpm : 350...450

START CUT-OUT

1/min : 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 1050 Del.quantity cm3/: 137.0...141.0 1000 s: (134.0...144.0) cm3 : 5.00

Spread 1000 s: (8.00) rpm : 1050 Speed

Del.quantity cm3/: 87.0...89.0 * 1000 s: (84.0...92.0)

cm3 : 6.00 1000 s: (9.00) Spread

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

* = Set at reduced-delivery stop.

S0A

Firing order : 10-9-4-1-8-7 -6-3-5-2 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 17,4 b Test sheet Edition : 29.03.89 : 0-45-72-117-144-189-Phasing : 11.85 216-261-288-333 Replaces : ISO-4113 Tolerance + - ... : 0.50 (0.75)Test oil Combination no. Time to cyl. no. : 10 : 0 401 849 160 Injection pump BASIC SETTING Pump designation : PE10P100A320LS842 EP type number : 0 411 809 134 1st speed rpm : 1150 Governor Governor design. : RQ300/1150PA187-2R Rack travel in mm : 12.00...12.10 : 0 421 801 112 Governer no. Del.quantity cm3/: 11.5...11.7 Customer-spec. information 100 s: (11.3...11.9) : DAIMLER-BENZ Customer : OM 403 cm3 : 0.3Engine Spread : 259.0 : 2300 1st version kW 100 s: (0.5) Rated speed rpm : 300.02nd speed Rack travel in mm: 7.4...7.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.3...1.9 Test oil 100 s: (1.0...2.1) cm3 : 0.3inlet temp. ., C : 38...42 Spread 100 s: (0.5) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 Speed rpm : 650 Rack travel in mm : 13.80...14.60 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version rpm : 1150 Speed : 115.5...117.5 Del quantity 1000 : (113.5...119.5) Test lines : 1 680 750 015 cm3 : 3.00 Spread 1000 : (5.00) Outside diameter x Wall thickness : 6.00X1.50X600 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm : 650 Rack travel in mm : 14.2 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 11.00 Speed rpm : 1195...1210

: 3.20...3.30

Rack travel in mm : 9.00...12.00

: (3.35...3.55)

2nd rack travel in: 4.00

Speed

rpm : 1235...1265

A03

Prestroke mm

4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.5 Testing: Speed rpm : 100 Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00 rpm : 410...450 Speed TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 12.00...12.10 rpm : 600 2nd speed Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 100.5...105.5 1000 s: (98.5...107.5) Spread cm3 : 5.00 1000 s: (7.00) RACK STOP ADJUSTMENT Speed rpm : 650 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1195...1210 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 1000 s: (121.0...149.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 18,3 d 7 Edition : 09.06.89 Replaces : ISO-4113 Test oil Combination no. : 0 401 849 706 Injection pump Pump designation : PE10P110A320LS3818-10 : 0 411 819 705 EP type number Governor Governor design. : RQV300...1150PA486-5 : 0 421 813 752 Governer no. Customer-spec. information : DAIMLER-BENZ Customer Engine : OM 423 1st version kW : 261.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 130...150 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

```
: 4.00...4.10
: (3.95...4.15)
Prestroke mm
Rack travel in mm : 9.00...12.00
Firing order : 10-9-4- 1- 8-
- 6- 3- 5- 2
                                             7
Phasing : 0-45-72-11/-144-
Phasing : 216-261-288-333
Tolerance + -, : 0.50 (0.75)
                     : 0-45-72-117-144-189-
Time to cyl. no. : 10
BASIC SETTING
            rpm : 1150
1st speed
Rack travel in mm : 11.20...11.30
Del.quantity cm3/: 12.6...12.8
               100 s: (12.3...13.0)
               cm3 : 0.4
Spread
               100 s: (0.8)
2nd speed rpm : 300.0
Rack travel in mm : 7.9...8.1
Del.quantity cm3/ : 1.4...2.2
100 s: (1.1...2.4)
               cm3 : 0.4
Spread
               100 s: (0.7)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed rpm : 300
                    : 1.60...1.80
  travel mm
2nd speed rpm : 800
                     : 4.50...5.00
  travel mm
               rpm : 1150
: 7.50...8.00
rpm : 1250
3rd speed
  travel mm
4th speed
                     : 9.50...10.00
  travel mm
GUIDE SLEEVE POSITION
Control-Lever position
              Degree: -1
Speed rpm : 1230
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
               rpm : 1150
```

Del.quantity : 126.U...120.U 1000 : (123.5...130.5) Spread cm3 : 4.00 1000 : (8.00) RATED SPEED 1st version Control Lever position degrees: 63...71 Testing: 1st rack travel in: 10.20 Speed rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 16...24 Testing: : 200 Speed rom Minimum rack trave: 10.20 Speed rpm : 300 Rack travel in mm : 7.90...8.10 CONSTANT REGULATION rpm : 300...600 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 11.20...11.30 rpm : 600 2nd speed Rack travel in m: 11.50...11.70 3rd speed rpm : 900 Rack travel in m: 11.50...11.70 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 110.0...114.0 1000 s: (107.0...117.0) cm3 : 6.00Spread 1000 s: (9.00) **BREAKAWAY**

1st version

A06

1mm rack travel less than full load rack tr: 10.20 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

: 3.90...4.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.85...4.05) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-8--6-3-5-2 : MAN 18,2 c Test sheet : 07.02.89 Edition Replaces : 22.1.88 Test oil : ISO-4113 : 0-45-72-117-144-189-Phasing 216-261-288-333 : 0 401 849 734 Combination no. Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PE10P120A520/4LS3843 Time to cyl. no. : 10 : 0 411 829 707 EP type number BASIC SETTING Governor Governor design. : RQ300/1000PA837 : 0 421 801 372 rpm : 1000 Governer no. 1st speed Rack travel in mm : 11.30...11.40 Customer-spec. information : MAN Customer Del.quantity cm3/: 20.4...20.6 Engine : D2840LF/460 100 s: (20.1...20.9) 1st version kW : 338.0 Rated speed : 2000 cm3 : 0.5Spread 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. , C : 38...42 Overflow valve 100 s: (1.4...2.6) : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position assembly : 1 688 901 019 Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Del.quantity : 204.0...209.0) Test lines : 1 680 750 067 Outside diameter : 5.00 cm3 Spread 1000 : (9.00) x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version Setting point: per values rpm : 600 BEGINNING OF DELIVERY Rack travel in mm : 20.0 Test pressure, bar: 25...27 Testing:

1st rack travel in: 10.30 rpm : 1045...1060 Speed 2nd rack travel in: 4.00 Speed rpm : 1125...1155 4th rack travel in: 1250 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.1 Testina: : 100 Speed rpm Minimum rack trave: 7.60 : 300 Speed rpm Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 : 365...405 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.80...11.90 rpm : 600 2nd speed Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 1000 : 11.30...11.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 380 Rack travel in m: 10.40...10.50 3rd pressure hPa : 500 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.guantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR, 2-7778

80A

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 18,2 c1 : 07.02.89 Test sheet Edition : 22.1.88 Replaces Test oil : ISO-4113 : 0 401 849 735 Combination no. Injection pump Pump designation : PE10P120A520/4LS3843 EP type number : 0 411 829 707 Governor Governor design. : RQV300...1000PA838 Governer no. : 0 421 813 585 Customer-spec. information Customer : MAN : D2840LF/460 Engine : 338.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening : 207...210 pressure, bar Orifice plate : 0,8 diameter mm Test lines : 1 680 750 067 Outside diameter x Wall thickness

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-- 6-3-5-: 0-45-72-117-144-189-Phasing 216-261-288-333 Tolerance $+ - \dots : 0.50 (0.75)$ Time to cyl. no. : 10 BASIC SETTING rpm: 1000 1st speed Rack travel in mm : 11.30...11.40 Del.quantity cm3/: 20.4...20.6 100 s: (20.1...20.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.02nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.40 travel mm rpm : 500 2nd speed : 3.10...3.50 travel mm : 850 3rd speed rpm : 6.60...6.90 travel mm : 1000 4th speed rpm : 7.70...7.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1150 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Aneroid pressure h: 1000

: 3.90...4.00

: (3.85...4.05)

7

Prestroke mm

x Length mm

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 204.0...209.0) : 5.00 : (9.00) 1000 RATED SPEED 1st version Control lever position degrees: 49...57 Testing: 1st rack travel in: 10.30 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed : 100 rpm Minimum rack trave: 7.60 rpm : 300 Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 335...445 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 1000 Pressure : 11.30...11.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 380 Rack travel in m: 10.40...10.50 3rd pressure hPa : 500 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min : 230 (250) Speed FUEL DELIVERY CHARACTERISTICS

1st version

A10

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 144.0...146.0
1000 s: (141.0...149.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7779

: 4.20...4.30 : (4.15...4.35) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1-- 6- 3- 5-Firing order Test sheet : MAN 17,4 c1 Edition : 28.04.89 Replaces : ISO-4113 Test oil : 0-45-72-117-144-189-Phasina : 0 401 849 744 216-261-288-333 Combination no. Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PE10P120A520/4LS3833 Time to cyl. no. : 10 EP type number : 0 411 829 706 BASIC SETTING Governor Governor design. : RQ75DPA663-7 Governer no. : 0 421 801 331 1st speed rpm : 700 Rack travel in mm : 12.30...12.40 Customer-spec. information Customer : MAN Del.quantity cm3/: 22.9...23.1 : D2840 LE Engine 100 s: (22.6...23.4) 1st version kW : 352.0 Rated speed : 1500 Spread cm3 : 0.5100 s: (0.9) TEST BENCH REQUIREMENTS Test oil 2nd speed rpm : 300.0 inlet temp. , C : 38...42 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Overflow valve : 1 417 413 025 cm3 : 0.8Spread 100 s: (1.2) Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder assembly : 1 688 901 019 1st version rpm : 700 Speed 229.0...231.0 1000 : (226.0...234.0) cm3 : 5.00 Opening Del.quantity : 207...210 pressure, bar Spread 1000 : (9.00) Orifice plate diameter mm : 0,8 RATED SPEED : 1 680 750 067 Test lines 1st version Outside diameter Testing: x Wall thickness 1st rack travel in: 11.30 x Length mm : 6.00X1.50X1000 rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 790...803 (A) Injection pump setting values Speed Insp. values in parentheses Set equal delivery quant. 4th rack travel in: 950 rpm : 0.00...1.00Speed per values ____

STARTING FUEL DELIVERY

8- 7

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Speed

rpm : 100

Remarks:

: MAN-NR. 2-7975

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 17,4 d : 23.06.89 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 744

Injection pump

Pump designation: PE10P120A520/4LS3849

: 0 411 829 708 EP type number

Governor

Governor design. : RQ750PA663-7 : 0 421 801 331 Governer no.

Customer-spec. information Customer : MAN

: D2840 LE Engine

: 352.0 : 1500 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _ C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30

: (4.15...4.35)

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-- 6-3-5-

Phasing : 0-45-72-117-144-189-

216-261-288-333 Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 229.0...231.0 Del.quantity

1000 : (226.0...234.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30 Speed rpm : 750...755

2nd rack travel in: 4.00

rpm : 790...803 Speed

4th rack travel in: 950

: 0.00...1.00 Speed rom

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

: MAN-NR. 2-7975

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : STE 9,7 a : 28.06.89 Test sheet Edition Replaces : 8.83 Test oil : ISO-4113 Combination no. : 0 401 856 702 Injection pump Pump designation : PE6P110A721RS3102 EP type number : 0 411 816 726 Governor Governor design. : RQV250...1200PA257-1 : 0 421 813 334 Governer no. Customer-spec. information Customer : STEYR Engine : WD615.84 1st version kW : 191.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. _ C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

```
Phasing
                 : 0-60-120-180-240-300
Time to cyl. no. : 1
BASIC SETTING
1st speed
             rpm : 1200
Rack travel in mm : 12.60...12.70
Del.quantity cm3/ : 15.1...15.3
            100 s: (14.8...15.6)
Spread
            cm3 : 0.4
            100 s: (0.8)
2nd speed rpm : 250.0 Rack travel in mm : 7.0...7.2
Del.quantity cm3/: 1.3...1.7
            100 s: (1.0...1.9)
Spread
            cm3 : 0.4
            100 s: (0.7)
(B) Setting of injection pump
   with governor
GUIDE SLEEVE TRAVEL
            rpm : 250
1st speed
                 : 0.90...1.30
  travel mm
            rpm : 400
2nd speed
 travel mm
                 : 2.30...2.70
            rpm : 800
3rd speed
                 : 4.40...5.00
  travel mm
                 : 1240
4th speed
            man
                 : 8.10...8.30
  travel mm
5th speed
            rpm : 1325
                 : 9.40...9.70
  travel mm
GUIDE SLEEVE POSITION
Control-lever position
           Degree: -1
            rpm : 1250
Speed
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
            rpm : 1200
Aneroid pressure h: 700
Del.quantity : 131.0...156.0)
```

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90 : (2.75...2.95)

cm3 : 4.00 1000 : (8.00) Spread RATED SPEED 1st version Control lever position degrees: 44...52 Testing: 1st rack travel in: 11.60 Speed rpm : 1240...1250 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1450 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed rom : 100 Minimum rack trave: 8.50 Speed rpm: 250 Rack travel in mm : 7.00...7.20 CONSTANT REGULATION rpm : 250...400 Speed Aneroid/Altitude Compensator Test 1st version Settina rpm : 500 hPa : 700 Speed Pressure Rack travel mm : 12.60...12.70 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.20...10.30 2nd pressure hPa : 460 Rack travel in m: 12.00...12.10 3rd pressure hPa : 330 Rack travel in m: 10.80...11.00 START CUT-OUT 1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

rpm : 700

Aneroid pressure h: 700

1st version

Speed

A16

Del.quantity cm3/: 147.0...151.0 1000 s: (144.0...154.0) Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 99.0...103.0 1000 s: (96.0...106.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.60 rpm : 1240...1250 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 210.0...240.0 Remarks: **APPLICATION** Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : MWM 21,6 a4 : 24.02.89 Test sheet Edition : 6.4.88 Replaces Test oil : ISO-4113 : 0 401 870 091 Combination no. Injection pump Pump designation : PE12P120A520/5RS428-EP type number : 0 411 820 034 Governor Governor design. : RSUV300...900P0A320-: 0 421 829 107 Governer no. Customer-spec. information Customer : MWM : TBD 234 V12 Engine 1st version kW : 600.0 Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1- 2- 9- 10- 5- 6-11- 12- 3- 4- 7- 8 Phasing : 0-30-60-90-120-150-180-210-240-270-300-330 Tolerance + - ... : 0.50 (0.75)BASIC SETTING rpm: 7501st speed Rack travel in mm : 13.70...13.80 Del.guantity cm3/: 24.9...25.1 100 s: (24.6...25.4) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 3.75 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 750 : 249.0...251.0 Speed Del.quantity 1000 : (246.0...254.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 65...73

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

Testina: 1st rack travel in: 12.70 : 94**0...**950 Speed rpm 2nd rack travel in: 4.00 rpm : 965...995 Speed 4th rack travel in: 1130 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 5.3
Speed rpm : 300
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00 : 320...380 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.70...13.80 rpm : 450 2nd speed Rack travel in m: 13.70...13.80 3rd speed : 280 rpm Rack travel in m: 14.90...15.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.70 : 940...950 Speed rpm STARTING FUEL DELIVERY Speed rpm : 100 LOW IDLE : 300 rpm Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: **APPLICATION** Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 h 1 : 23.06.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 220

Injection pump

Pump designation : PE6P100A320LS805 EP type number : 0 411 806 148

Governor

Governor design. : RSV575...1250P1A817

: 0 421 833 322 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 401

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.40...3.50 Prestroke mm

: (3.35...3.55)

Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

Time to cyl. no. : 6

BASIC SETTING

Phasing

rpm: 1230 1st speed

Tolerance $+ - \frac{1}{2}$.: 0.50 (0.75)

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

: 0-45-120-165-240-285

cm3 : 0.3Spread

100 s: (0.6)

rpm : 575.0 2nd speed

Rack travel in mm : 6.0...6.3 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1230 Speed

: 93.0...95.0 Del.quantity

1000 : (91.0...97.0) cm3 : 3.00

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.10

Speed rpm : 1265...1275 2nd rack travel in: 4.10

Speed rpm : 1290...1305 : 0.30...1.40 Speed rpm

LOW IDLE 1

Control lever

A19

position degrees: 26...34

Setting point w/out bumper spring

Speed rpm : 575 Rack travel in mm : 4.7

Speed rpm : 575
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00

: 570...630 Speed rpm

SET IDLE AUXILIARY SPRING

Speed rpm : 575 Rack travel in mm : 1.50...2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.10

rpm : 1265...1275 Speed

STARTING FUEL DELIVERY

Del.quantity cm3/: 120.0...140.0 1000 s: (116.0...144.0)

HIGH IDLE

1st version

Rack travel in mm : 4.00...4.20

cm3 : 4.00 Spread

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 7,0 L Edition : 18.07.89 Replaces : ISO-4113 Test oil : 0 401 876 232 Combination no. Injection pump Pump designation: PE6P110A320RS374 Governor Governor design. : RSV200...1200P1/365R Customer-spec. information : VOLVO-PENTA Customer : TMD 70 C Engine TEST BENCH REQUIREMENTS Test oil inlet temp., C : 38...42 Inlet press., bar: 1.5 Test nozzle holder : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6,00x1,50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ BEGINNING OF DELIVERY : 3,0...3,1 : (2,95...3,15) Prestroke mm Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + -, : 0,50 (0,75)

Rack travel in mm : 10,50...10,60 Del.guantity cm3/: 9,1...9,3 100 s: (8,8...9,6) cm3 : 0.4Spread 100 s: (-) 2nd speed rpm : 200 Rack travel in mm : 8,60...8,70 Del.quantity cm3/: 1,7...2,7 100 s: (-) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0,30...0,70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Del.quantity : 91,0...93,0 1000 : (88,0...96,0) cm3 : 4,0 1000 : (-) Spread RATED SPEED 1st version Control Lever position degrees: 64...72 Testing: 1st rack travel in: 9,50 Speed rpm : 1240...1250 2nd rack travel in: 4,00 Speed rpm: 1295...1325 4th rack travel in: 1400 Speed rpm : 0,30...1,70 LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 200 Rack travel in mm : 8,10 Testing: rpm : 100 Speed Minimum rack trave: 20,00 rpm : 200 Speed

1st speed rpm: 1200

A21

BASIC SETTING

Rack travel in mm: 8,60...8,70
Rack travel in mm: 2,00
Speed rpm: 390...450
Speed rpm: 550
Maximum rack trave: 1,00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9,50 Speed rpm : 1240...1250

HIGH IDLE

1st version

rpm : 1310 Speed

Rack travel in mm : 4,00...4,10

LOW IDLE

Speed rpm : 200 Del.quantity cm3/ : 19...29 1000 s: (-)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 o11
Edition : 21.04.89
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 401 876 316

Injection pump

Pump designation : PE6P100A720RS447 EP type number : 0 411 806 191

Governor

Governor design. : RSV250...1200P5A509-

1

Governer no. : 0 421 833 199

Customer—spec. information Customer : DAF

Engine : DHT 825

1st version kW : 162.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ., .: 0.30 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4) cm3 : 0.3

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

Del.quantity : 118.5...120.5

1000 : (116.5...122.5) Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 10.40

Speed rpm : 1240...1250

2nd rack travel in: 4.00 Speed rpm : 1300...1330

3rd rack travel in: 4.00 Speed rpm: 1325...1355 4th rack travel in: 1530 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 4.8 Speed rpm : 250
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00 : 540...640 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.60...11.70 rpm : 400 2nd speed Rack travel in m: 11.60...11.80 3rd speed rpm : 300 Rack travel in m: 11.90...12.40 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 700 Pressure : 11.40...11.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 315 Rack travel in m: 11.10...11.20 3rd pressure hPa : 225 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 92.5...96.5 1000 s: (90.0...99.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 8.0...12.0 1000 s: (5.5...14.5)

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cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

A24

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: VOL 7,1 c : 24.02.89 Test sheet Edition Replaces Test oil : 12.9.86 : ISO-4113

: 0 401 876 321 Combination no.

Injection pump

Pump designation : PE6P110A320RS497 EP type number : 0 411 816 165

Governor

Governor design. : RSV200...1200P1A374-

: 0 421 833 204 Governer no.

Customer-spec. information : VOLVO Customer

: TD71A Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.6...11.8

100 s: (11.3...12.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 200.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.6...2.2 100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 110.0...121.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.80 Speed rpm : 1210...1220 2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1410

rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm: 200
Rack travel in mm: 5.0
Speed rpm: 200
Rack travel in mm: 5.40...5.60
Rack travel in mm: 2.00 : 280...340 Speed rom Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 900 Pressure : 11.80...11.90 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 675 Rack travel in m: 11.60...11.70 3rd pressure hPa : 200 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 82.0...85.0 1000 s: (79.0...88.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1210...1220 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...190.0 1000 s: (160.0...190.0) Rack travel in mm : 20.00...21.00

LOW IDLE

A26

Speed rpm : 200
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...22.0
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : PEN 6,1 q : 10.02.89 Test sheet Edition : 0-60-120-180-240-300 Phasina : 9.12.88 Replaces : ISO-4113 Test oil Combination no. : 0 401 876 327 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6P110A320RS499 EP type number : 0 411 816 169 1st speed rpm: 1000 Governor : RSV325...1400P2A374-Rack travel in mm : 11.10...11.20 Governor design. : 0 421 833 220 Del.quantity cm3/: 12.0...12.2 Governer no. 100 s: (11.7...12.5) Customer-spec. information : VOLVO-PENTA Customer cm3 : 0.4Spread Engine : TAMD61A 100 s: (0.7) 1st version kW : 220.0 : 2800 rpm : 325.0Rated speed 2nd speed Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 1.1...1.5 TEST BENCH REQUIREMENTS 100 s: (0.9...1.7) cm3 : 0.3 Test oil Spread 100 s: (0.6) inlet temp. , C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Governor spring pre-tension Click setting x : 6.00 Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 rpm : 1000 Speed Aneroid pressure h: 900
Del.quantity : 120.5...122.5
1000 : (117.5...125.5) Outside diameter x Wall thickness cm3 : 4.00 1000 : (7.50) : 6.00x1.50x600 x Length mm Spread (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant.

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.10 Speed rpm : 1450...1460

A27

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.50...2.60

: (2.45...2.65)

2nd rack travel in: 4.00 rpm : 1530...1560 Speed 4th rack travel in: 1630 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 3.7 Speed rpm : 325 Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 380...440 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 11.00...11.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 360 Rack travel in m: 8.70...8.80 3rd pressure hPa : 730 Rack travel in m: 10.70...10..80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 1400 Speed Del.quantity cm3/: 122.5...126.5 1000 s: (119.5...129.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 54.5...58.5 1000 s: (51.5...61.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1450...1460 Speed

Speed rpm : 100
Del.quantity cm3/: 135.0...165.0
1000 s: (-)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm3/: 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION Navy

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A28

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 10,1 f : 24.02.89 : 25.3.88 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 876 332 Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA Engine : 95 T1 AX, TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 0-60-120-180-240-300 Phasina Time to cyl. no. : 1 BASIC SETTING rpm: 750 1st speed Rack travel in mm : 11.90...12.00 Del.guantity cm3/: 11.3...11.5 100 s: (11.1...11.7) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 750 : 113.0...115.0 Speed Del.quantity 1000 : (111.0...117.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 40...48 Testing: 1st rack travel in: 10.90 Speed rpm : 790...800 2nd rack travel in: 4.00 Speed rpm: 825...855 3rd rack travel in: 4.00

rpm : 835...865

Speed

4th rack travel in: 1000

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.80...2.90

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: (2.75...2.95)

Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 11.90...12.00 2nd speed rpm : 450 Rack travel in m: 11.90...12.00 3rd speed rpm : 290 Rack travel in m: 13.20...13.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 790...800 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks: APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 f1 Edition : 24.02.89

Replaces : 7.10.88 : TSO-4113 Test oil

Combination no. : 0 401 876 332A

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information : ENASA Customer

: 95 A1 COMR 400 Engine

1st version kW : 125.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

B03

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm: 7.9...8.1

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 110.0...112.0 1000 : (108.0...114.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.40 Speed rpm : 1060...1065

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

3rd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 200 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 310...370 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 11.40...11.50 2nd speed rpm : 450 Rack travel in m: 11.40...11.50 3rd speed rpm : 250 Rack travel in m: 12.60...13.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1060...1065 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 f2 : 24.02.89 Edition Replaces : ISO-4113 Test oil : 0 401 876 332B Combination no. Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 : 0 421 833 273 Governer no. Customer-spec. information Customer : ENASA Engine : 95 A1 COML 4 1st version kW : 114.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | : 172...175 pressure, bar : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

```
: 0-60-120-180-240-300
Phasing
Tolerance + - ... : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
1st speed
              rpm : 1000
Rack travel in mm : 11.00...11.10
Del.quantity cm3/ : 10.0...10.2
             100 s: (9.8...10.4)
             cm3 : 0.3
Spread
             100 s: (0.6)
             rpm : 250.0
2nd speed
Rack travel in mm: 7.9...8.1
Del.quantity cm3/: 1.8...2.2
100 s: (1.5...2.4)
Spread cm3 : 0.3
             100 s: (0.5)
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -3
             rpm : 800
Speed
Rack travel in mm : 0.30...0.70
Governor spring pre-tension
Click setting x : 4.50
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 1000
Speed
                  : 100.0...102.0
Del.quantity
            1000 : (98.0...104.0)
                  : 3.50
            cm3
Spread
            1000 : (6.00)
RATED SPEED
1st version
Control lever
position degrees: 49...57
Testing:
1st rack travel in: 10.00
            rpm : 1010...1015
  Speed
2nd rack travel in: 4.00
            rpm : 1040...1070
 Speed
```

: 1-5-3-6-2-4

Firing order

per values

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

BEGINNING OF DELIVERY

Prestroke mm

3rd rack travel in: 4.00 rpm : 1050...1080 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 200 Speed Rack travel in mm : 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 200 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 310...370 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.00...11.10 rpm : 450 2nd speed Rack travel in m: 11.00...11.10 3rd speed rpm : 250 Rack travel in m: 12.20...12.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1010...1015 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: ENA 10,1 f3 Test sheet Edition : 24.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332c

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 95 AI COEB 2 Engine

1st version kW : 113.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 109.0...111.0 Del.quantity 1000 : (107.0...113.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

Testina:

1st rack travel in: 10.60 Speed rpm : 905...910 2nd rack travel in: 4.00 rpm : 935...965 Speed

B07

3rd rack travel in: 4.00 Speed rpm : 945...975 4th rack travel in: 1100 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.5 Testina: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 250 Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 340...400 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.60...11.70 2nd speed rpm : 450 Rack travel in m: 11.60...11.70 3rd speed rpm : 290 Rack travel in m: 12.80...13.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 905...910 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 f4 Phasing : 0-60-120-180-240-300 : 24.02.89 Edition Tolerance + - ... : 0.50 (0.75)Replaces : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 0 401 876 332b BASIC SETTING Injection pump Pump designation : PE6P100A820LS130 rpm: 750 1st speed EP type number : 0 411 806 179 Rack travel in mm : 11.60...11.70 Governor Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Del.quantity cm3/: 10.7...10.9 Customer-spec. information 100 s: (10.5...11.1) Customer : ENASA Spread cm3 : 0.3: 95 A1 COEB 1 Engine 100 s: (0.6) : 97.0 : 2000 1st version kW 2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Rated speed Del.quantity cm3/: 1.8...2.2 TEST BENCH REQUIREMENTS 100 s: (1.5...2.4) cm3 : 0.3Test oil Spread inlet temp. _, C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -3 rpm : 800 Inlet press., bar: 1.50 Speed Rack travel in mm : 0.30...0.70 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 4.50 Openina pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 rpm : 750 Speed : 107.0...109.0 Del.quantity 1000 : (105.0...111.0) Outside diameter : 3.50 x Wall thickness cm3 Spread 1000 : (6.00) : 6.00X1.50X600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ____ Control Lever position degrees: 38...46 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 10.60 Speed rpm : 755...760 2nd rack travel in: 4.00 : 2.80...2.90 Prestroke mm : (2.75...2.95)
Rack travel in mm : 9.00...12.00

B09

rpm : 780...810

Speed

3rd rack travel in: 4.00 rpm : 790...820 Speed 4th rack travel in: 1000 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.5 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 Speed rpm: 330...390 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.60...11.70 rpm : 450 2nd speed Rack travel in m: 11.60...11.70

3rd speed rpm : 300

Rack travel in m: 12.80...13.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 755...760 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm: 19.00...21.00 LOW IDLE : 250 Speed rpm Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 10,1 f5 : 24.02.89 Test sheet Edition Replaces : ISO-4113 Test oil : 0 401 876 332E Combination no. Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design: : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information : ENASA Customer : 95 T1 ADML 4 Engine 1st version kW : 158.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. .. C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x1.50x600 x Lenath mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasina Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 950 1st speed Rack travel in mm : 14.10...14.20 Del.quantity cm3/: 16.2...16.4 100 s: (16.0...16.6) cm3 : 0.3Spread 100 s: (0.6) rpm : 250.0 2nd speed Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 4.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 950 Speed : 162.0...164.0 Del quantity 1000 : (160.0...166.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 47...55 Testing: 1st rack travel in: 13.10 Speed rpm : 960...965 2nd rack travel in: 4.00 rpm : 1000...1030

Speed

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

3rd rack travel in: 4.00 Speed rpm : 1010...1040 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed rpm : 200 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 320...380 TORQUE CONTROL Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 14.10...14.20 2nd speed rpm : 450 Rack travel in m: 14.10...14.20 3rd speed rpm : 250 Rack travel in m: 15.30...15.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 Speed rpm : 960...965 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed : 200 rpm Rack travel in mm : 5.90...6.10

Remarks:

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 f6 Phasing : 0-60-120-180-240-300 : 24.02.89 Edition Tolerance + - ., .: 0.50 (0.75)Replaces : ISO-4113 Test oil Time to cyl. no. : 1 : 0 401 876 332F Combination no. BASIC SETTING Injection pump Pump designation : PE6P100A820LS130 1st speed rpm: 900 : 0 411 806 179 EP type number Rack travel in mm : 14.20...14.30 Governor Governor design. : RSV250...1000P1A532 : 0 421 833 273 Governer no. Del.quantity cm3/: 16.3...16.5 Customer-spec. information 100 s: (16.1...16.7) Customer : ENASA cm3 : 0.3Spread Engine : 95 T1 AOEA 2 100 s: (0.6) 1st version kW : 147.0 2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Rated speed : 2000 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Test oil cm3 : 0.3Spread 100 s: (0.5) inlet temp. ., C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -3 rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...0.70 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 4.50 Openina pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines rpm : 900 : 1 680 750 015 Speed : 163.0...165.0 Del.quantity 1000 : (161.0...167.0) cm3 : 3.50 Outside diameter x Wall thickness Spread 1000 : (6.00) : 6.00X1.50X600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 45...53 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 13.20 Speed rpm: 905...910 Prestroke mm : 2.80...2.90 : (2.75...2.95) 2nd rack travel in: 4.00 Rack travel in mm : 9.00...12.00 rpm : 935...965

Speed

3rd rack travel in: 4.00 rpm : 945...975 Speed 4th rack travel in: 1150 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 340...400 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 14.20...14.30 rpm : 450 2nd speed Rack travel in m: 14.20...14.30 3rd speed rpm : 290 Rack travel in m: 15.40...16.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.20 rpm : 905...910 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0

1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

B14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 f7 Edition : 24.02.89 Replaces : ISO-4113 Test oil : 0 401 876 332G Combination no. Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA : 95 T1 AOEB 1 Engine 1st version kW : 146.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test lines : 1 680 750 D15 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 750 1st speed Rack travel in mm : 14.40...14.50 Del.quantity cm3/: 16.7...16.9 100 s: (16.5...17.1) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 750 Speed : 167.0...169.0 Del.quantity 1000 : (165.0...171.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 39...47 Testing: 1st rack travel in: 13.40 Speed rpm: 755...760 2nd rack travel in: 4.00 rpm : 780...810 Speed

Firing order : 1-5-3-6-2-4

B15

per values ____

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90 : (2.75...2.95)

BEGINNING OF DELIVERY

Prestroke mm

3rd rack travel in: 4.00 rpm : 790...820 Speed 4th rack travel in: 1000 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 330...390 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 14.40...14.50 rpm : 450 2nd speed Rack travel in m: 14.40...14.50 3rd speed rpm : 300 Rack travel in m: 15.60...16.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 755...760 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: ENA 10,1 f8 : 24.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 332H

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

: 95 A1 COIB 4 Engine

1st version kW : 120.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

B17

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 115.0...117.0 Del.quantity 1000 : (113.0...119.0)

: 3.50 Spread cm3 1000 : (6,00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.80

rpm : 1010...1015 Speed

2nd rack travel in: 4.00

rpm : 1040...1070 Speed

3rd rack travel in: 4.00 rpm : 1050...1080 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed rpm : 200 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 310...370 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.80...11.90 2nd speed rpm : 450 Rack travel in m: 11.80...11.90 3rd speed rpm : 250 Rack travel in m: 13.00...13.60 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1010...1015 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: ENA 10,1 f9 Test sheet : 24.02.89 Edition Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332K

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

: 95 T1 AOIB 4 Engine

1st version kW : 165.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Del.quantity : 163.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testina:

1st rack travel in: 13.20 Speed rpm : 960...965

2nd rack travel in: 4.00

rpm : 1000...1030 Speed

B19

3rd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 200 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed : 200 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 320...380 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 14.20...14.30 rpm : 450 2nd speed Rack travel in m: 14.20...14.30 3rd speed rpm : 250 Rack travel in m: 15.40...16.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.20 Speed rpm : 960...965 STARTING FUEL DELIVERY Speed rpm_ : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 200 Speed rpm

Rack travel in mm : 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: ENA 10,1f10 Test sheet Edition : 24.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332L

Injection pump

Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 95 T1 AOIR 43 Engine

1st version kW : 166.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

B21

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Speed Del.quantity 1000 : 163.0...165.0 1000 : (161.0...167.0) cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 13.10 Speed rpm: 1010...1015 2nd rack travel in: 4.00

rpm : 1045...1075 Speed

3rd rack travel in: 4.00 rpm : 1055...1085 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 200 rpm Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 310...370 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 14.10...14.20 rpm : 450 2nd speed Rack travel in m: 14.10...14.20 3rd speed rpm : 250 Rack travel in m: 15.30...15.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.10 rpm : 1010...1015 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm: 19.00...21.00 LOW IDLE : 200 rpm Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1f11 : 24.02.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 876 332M Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design: : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA : 9105,42,25,43 Engine : 132.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. . C . : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

```
Phasing
                    : 0-60-120-180-240-300
Tolerance + - ... : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
               rpm: 900
1st speed
Rack travel in mm : 11.70...11.80
Del.guantity cm3/: 11.1...11.3
              100 s: (10.9...11.5)
Spread
              cm3 : 0.3
              100 s: (0.6)
2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1
Del.quantity cm3/: 1.8...2.2
100 s: (1.5...2.4)
              cm3 : 0.3
Spread
              100 s: (0.5)
GUIDE SLEEVE POSITION
Control-lever position
             Degree: -3
              rpm : 800
Rack travel in mm : 0.30...0.70
Governor spring pre-tension
Click setting x : 4.50
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
              rpm : 900
Speed
                    : 111.0...113.0
Del.quantity
             1000 : (109.0...115.0)
                    : 3.50
Spread
             cm3
             1000 : (6.00)
RATED SPEED
1st version
Control Lever
 position degrees: 47...55
Testing:
1st rack travel in: 10.70
Speed rpm : 965...975
2nd rack travel in: 4.00
             rpm : 1000...1030
  Speed
```

Firing order : 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

3rd rack travel in: 4.00 Speed rpm : 1010...1040 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring : 200 Speed rpm Rack travel in mm: 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 : 200 Speed rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 320...380 TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 11.70...11.80 2nd speed rpm : 450 Rack travel in m: 11.70...11.80 d speed rpm : 250 3rd speed Rack travel in m: 12.90...13.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 965...975 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 200 Rack travel in mm : 5.90...6.10 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: ENA 10,1f12 : 24.02.89 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 401 876 332N Combination no.

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 9100.14.25.32 Engine

1st version kW : 125.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1000 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 170.0...114.0)
1000 : (108.0...114.0)
1000 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.60

Speed rpm : 1010...1020

2nd rack travel in: 4.00

rpm : 1045...1055 Speed

B25

3rd rack travel in: 4.00 Speed rpm : 1055...1085 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 340...400 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.60...11.70 rpm : 450 2nd speed Rack travel in m: 11.60...11.70 3rd speed rpm : 250 Rack travel in m: 12.80...13.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1010...1020 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 10,1f13 Test sheet Edition : 24.02.89 Replaces : ISO-4113 Test oil : 0 401 876 332R Combination no. Injection pump Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number Governor Governor design. : RSV250...1000P1A532 : 9 421 833 273 Governer no. Customer—spec. information : ENASA Customer : 9100.04 Engine 1st version kW : 107.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | : 172...175 pressure, bar : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 900 1st speed Rack travel in mm : 11.40...11.50 Del.quantity cm3/: 10.4...10.6 100 s: (10.2...10.8) Spread cm3 : 0.3100 s: (0.6) rpm : 250.0 2nd speed Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 100 s: (0.5) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed : 104.0...106.0 Del.quantity 1000 : (102.0...108.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 44...52 Testing: 1st rack travel in: 10.40 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 950...960 Speed

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

3rd rack travel in: 4.00 rpm : 960...990 Speed 4th rack travel in: 1150 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 340...400 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.40...11.50 2nd speed rpm : 450 Rack travel in m: 11.40...11.50 3rd speed rpm : 250 Rack travel in m: 12.60...13.20 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 915...925 Speed STARTING FUEL DELIVERY LOW IDLE : 250 Speed rpm Rack travel in mm : 5.90...6.10

B28

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1f14 Edition : 24.02.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 332s

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer-spec. information Customer : ENASA

: 9105.05 Engine

1st version kW : 86.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Phasing : 0-60-120-180-240-300

Firing order : 1-5-3-6-2-4

Tolerance + - 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

: 116.0...118.0 Del.quantity 1000 : (114.0...120.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.10 Speed rpm : 760...770 2nd rack travel in: 4.00

rpm : 775...805 Speed

CO1

3rd rack travel in: 4.00 rpm : 785...815 Speed 4th rack travel in: 1000 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 12.10...12.20 rpm : 450 2nd speed Rack travel in m: 12.10...12.20 3rd speed rpm : 290 Rack travel in m: 13.30...13.90 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 Speed rpm : 760...770 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1f15 : 24.02.89 Edition Replaces : ISO-4113 Test oil : 0 401 876 332T Combination no. Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RSV250...1000P1A532 Governer no. : 0 421 833 273 Customer-spec. information Customer : ENASA Engine : 9109.04 1st version kW : 140.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm : 900 1st speed Rack travel in mm : 13.20...13.30 Del.guantity cm3/: 14.2...14.4 100 s: (14.0...14.6) Spread cm3 : 0.3100 s: (0.6) rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed : 142.5...144.5 Del.quantity 1000 : (140.5...146.5) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 44...52 Testing: 1st rack travel in: 12.00 Speed rpm: 915...925 2nd rack travel in: 4.00

Speed rpm : 945...975

BEGINNING OF DELIVERY

per values ____

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)
Rack travel in mm : 9.00...12.00

003

3rd rack travel in: 4.00 Speed rpm : 955...985 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 9.40...6.10 Rack travel in mm : 2.00 : 340...400 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.20...13.30 rpm : 450 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 250 Rack travel in m: 14.40...15.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 250 Speed rpm Rack travel in mm : 5.90...6.10 Remarks:

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 11,9 g1 Test sheet Edition : 17.02.89 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ... : 0.50 (0.75)Combination no. : 0 401 876 333A Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS257 EP type number : 0 411 826 075 BASIC SETTING Governor Governor design. : RSV250...1100P0A533 1st speed rpm: 1100 Governer no. : 0 421 833 274 Rack travel in mm : 11.80...11.90 Customer-spec. information Del.quantity cm3/: 22.9...23.1 Customer : ENASA : 96 T1AD 100 s: (22.6...23.4) Engine cm3 : 0.51st version kW : 240.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) Test oil inlet temp. . C : 38...42 cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 st (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 assembly : 1 688 901 019 Opening. pressure, bar : 207...210 Governor spring pre-tension Click setting x : 4.50 Orifice plate diameter mm : 0,8 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 : 229.0...231.0 Test lines : 1 680 750 067 Speed Del.quantity : 229.U...231.0 1000 : (226.0...234.0) Spread cm3 : 5.00 1000 : (9.00) Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version Control lever per values position degrees: 41...49 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 10.80

rpm : 1115...1120 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 3rd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 250
Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00 Speed rpm : 350...410 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.80...11.90 2nd speed rpm : 450 Rack travel in m: 11.80...11.90 3rd speed rpm : 250 Rack travel in m: 13.00...13.60 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1115...1120 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION**

Special-purpose vehicle

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : ENA 11,9 g2 Test sheet : 17.02.89 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ., .: 0.50 (0.75)Combination no. : 0 401 876 333B Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS257 : 0 411 826 075 EP type number BASIC SETTING Governor Governor design. : RSV250...1100P0A533 1st speed rpm : 1100 : 0 421 833 274 Governer no. Rack travel in mm : 11.60...11.70 Customer-spec. information Del.quantity cm3/: 22.3...22.5 Customer : ENASA : 96 T1AO 100 s: (22.0...22.8) Engine cm3 : 0.51st version kW : 228.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm : 5.7...5.9 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. , C : 38...42 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 : 1 688 901 019 assembly Opening | pressure, bar : 207...210 Governor spring pre-tension Click setting x : 4.50 Orifice plate diameter mm : 0,8 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 : 223.0...225.0 Test lines : 1 680 750 067 Speed Del.quantity 1000 : (220.0...228.0) Outside diameter : 5.00 x Wall thickness cm3 Spread 1000 : (9.00) : 6.00x1.50x1000 x Length mm (A) Injection pump setting values

RATED SPEED

1st version Control lever

position degrees: 41...49

Testina:

1st rack travel in: 10.60

C07

Insp. values in parentheses Set equal delivery quant.

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

: 1110...1115 Speed rpm 2nd rack travel in: 4.00 : 1150...1180 Speed rpm 3rd rack travel in: 4.00 : 1160...1190 Speed rpm 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm Rack travel in mm : 5.3 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 350...410 Speed rpm TORQUE CONTROL Dimension a mm : 2.30 Torque control curve - 1st version 1st speed : 1100 rpm Rack travel in m: 11.60...11.70 rpm : 450 2nd speed Rack travel in m: 11.60...11.70 3rd speed rpm : 250 Rack travel in m: 12.80...13.40 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1110...1115 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : ENA 11,9 g3 Test sheet : 17.02.89 Edition Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Tolerance + - ., . : 0.50 (0.75)Combination no. : 0 401 876 333c Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS257 : 0 411 826 075 EP type number BASIC SETTING Governor Governor design. : RSV250...1100P0A533 1st speed rom: 900 Governer no. : 0 421 833 274 Rack travel in mm : 12.20...12.30 Customer-spec. information Customer : ENASA Del.quantity cm3/: 23.7...23.9 : 96 T1A0 100 s: (23.4...24.2) Engine cm3 : 0.5: 209.0 1st version kW Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Test oil Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) inlet temp. , C : 38...42 Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 rpm : 800 assembly : 1 688 901 019 Speed Rack travel in mm : 0.30...0.70 Openina : 207...210 pressure, bar Governor spring pre-tension Click setting x : 4.50 Orifice plate diameter mm : 0,8 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Test lines : 1 680 750 067 Speed : 237.0...239.0 Del.quantity 1000 : (234.0...242.0) Outside diameter : 5.00 x Wall thickness Spread cm3 : 6.00x1.50x1000 1000 : (9.00) x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 36...44

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Testing: 1st rack travel in: 11.20

rpm : 905...910 Speed 2nd rack travel in: 4.00 rpm : 960...990 Speed 3rd rack travel in: 4.00 rpm : 970...1000 Speed 4th rack travel in: 1150 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testina: Speed rpm : 100 Minimum rack trave: 19.50 : 250 Speed rom Rack travel in mm: 5.70...5.90 Rack travel in mm: 2.00 Speed rpm: 350...410 TORQUE CONTROL Dimension a mm : 2.30 Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 12.20...12.30 d speed rpm : 450 2nd speed Rack travel in m: 12.20...12.30 3rd speed rpm : 290 Rack travel in m: 13.40...14.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 905...910 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION**

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11,9 g4 Edition : 17.02.89 Replaces : ISO-4113 Test oil Combination no. : 0 401 876 333D Injection pump Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075 Governor Governor design. : RSV250...1100P0A533 : 0 421 833 274 . Governer no. Customer-spec. information : ENASA Customer : 96 T1AO Engine 1st version kW : 195.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

: (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 750 1st speed Rack travel in mm : 12.50...12.60 Del.guantity cm3/: 23.7...23.9 100 s: (23.4...24.2) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2) GUIDE SLEEVE POSITION Control-Lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 750 Speed : 237.0...239.0 1000 : (234.0...242.0) Del.quantity cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 32...40 Testing: 1st rack travel in: 11.50

Prestroke mm

: 2.80...2.90

rpm : 755...760 Speed 2nd rack travel in: 4.00 : 820...850 Speed rpm 3rd rack travel in: 4.00 : 830...860 Speed rpm 4th rack travel in: 1000 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm Rack travel in mm : 5.3 Testina: Speed rpm Minimum rack trave: 19.50 Speed : 250 rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 350...410 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 12.50...12.60 2nd speed rpm : 450 Rack travel in m: 12.50...12.60 d speed rpm : 300 3rd speed Rack travel in m: 13.70...14.30 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 755...760 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION** Special-purpose vehicle

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : ENA 11,9 g5 Test sheet : 17.02.89 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 401 876 333E Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS257 EP type number : 0 411 826 075 BASIC SETTING Governor Governor design. : RSV250...1100P0A533 1st speed rpm: 1000 : 0 421 833 274 Governer no. Rack travel in mm : 11.70...11.80 Customer-spec. information Del.guantity cm3/: 22.3...22.5 Customer : ENASA Engine : 96 T1A0 100 s: (22.0...22.8) : 220.0 : 2200 cm3 : 0.51st version kW Spread Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) Test oil inlet temp. .. C : 38...42 Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 assembly : 1 688 901 019 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x : 4.50 Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP diameter mm : 0,8 1st version Test lines : 1 680 750 067 Speed rpm : 1000 : 223.0...225.0 Del.quantity : (220.0...228.0) 1000 Outside diameter : 5.00 x Wall thickness Spread cm3 : (9.00) : 6.00x1.50x1000 1000 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant.

1st version Control lever

position degrees: 37...45

Testing: 1st rack travel in: 10.70

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1010...1015 Speed 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.3 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 250 Speed rpm Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00
Speed rpm: 350...410 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.70...11.80 2nd speed rpm : 450 Rack travel in m: 11.70...11.80 3rd speed rpm : 250 Rack travel in m: 12.90...13.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1010...1015 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks:

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : ENA 11,9 g6 Test sheet Edition : 17.02.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + -. .: 0.50 (0.75) Combination no. : 0 401 876 333F Injection pump Time to cyl. no. : 1 Pump designation : PE6P12DA32ORS257 EP type number : 0 411 826 075 BASIC SETTING Governor Governor design. : RSV250...1100P0A533 1st speed rpm: 1000 Governer no. : 0 421 833 274 Rack travel in mm : 11.20...11.30 Customer-spec. information Del.quantity cm3/: 21.2...21.4 Customer : ENASA : 96 T1A0 100 s: (20.9...21.7) Engine 1st version kW : 221.0 Spread cm3 : 0.5: 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) Test oil inlet temp. , C . : 38...42 Overflow valve cm3 : 0.8Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 assembly : 1 688 901 019 Opening : 207...210 pressure, bar Governor spring pre-tension Click setting x : 4.50 Orifice plate diameter mm : 0,8 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Test lines : 1 680 750 067 Speed : 212.0...214.0 Del.quantity 1000 : (209.0...217.0) cm3 : 5.00 1000 : (9.00) Outside diameter x Wall thickness Spread : 6.00X1.50X1000 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version Control lever per values position degrees: 37...45 BEGINNING OF DELIVERY

Testing:

1st rack travel in: 10.20

Test pressure, bar: 25...27

rpm : 1010...1020 Speed 2nd rack travel in: 4.00 Speed rpm : 1050...1060 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 5.3 Testing: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 350...410 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.20...11.30 2nd speed rpm : 450 Rack travel in m: 11.20...11.30 d speed rpm : 250 3rd speed Rack travel in m: 12.40...13.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1010...1020 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm: 19.50...21.00 Remarks: **APPLICATION** Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: DAF 11,7 f1 : 07.07.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 401 876 338 Combination no.

Injection pump

Pump designation : PE6P12OA32ORS415-1 EP type number : 0 411 826 123

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 321 Governer no.

Customer-spec. information Customer : DAF

: KS 238 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 6.9...7.1 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 700

Del.quantity : 185.0...187.0

1000 : (182.0...190.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.70

Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1185...1215
3rd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1400

rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring : 250 rpm Rack travel in mm : 6.0 : 250 Speed rpm Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 : 630...730 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1090 1st speed Rack travel in m: 10.70...10.90 rpm : 650 2nd speed Rack travel in m: 12.00...12.10 rpm : 775 3rd speed Rack travel in m: 11.60...11.80 rpm : 840 4th speed Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 11.70...11.80 Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 300 Rack travel in m: 11.30...11.40 3rd pressure hPa : 255 Rack travel in m: 10.80...11.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed : 1090 rpm Del.quantity cm3/: 170.0...174.0 1000 s: (167.0...177.0) Aneroid pressure h: -: 600 Speed rpm Del.quantity cm3/: 140.0...142.0 1000 s: (137.0...145.0)

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1130...1140

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 6.40...6.60

Remarks:

BREAKAWAY

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : PEN 12,2 b : 31.03.89 Edition : 9.12.88 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Combination no. : 0 401 876 761 Time to cyl. no. : 1 Injection pump Pump designation : PE6P120A320RS3206 EP type number : 0 411 826 773 BASIC SETTING Governor Governor design: : RSV250...900P4A374-6 1st speed rpm: 700 Governer no. : 0 421 833 283 Rack travel in mm : 11.70...11.80 Customer-spec. information : VOLVO-PENTA Del.quantity cm3/: 27.5...27.7 Customer Engine : TAMD122 A 100 s: (27.2...28.0) cm3 : 0.51st version kW : 280.0 Spread : 1800 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. , C : 38...42 100 s: (1.4...2.6) cm3 : 0.5Overflow valve Spread : 1 417 413 025 100 s: (0.7) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 : 1 688 901 019 rpm : 800 assembly Speed Rack travel in mm : 0.30...1.40 Opening | : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar 1st version Orifice plate diameter mm : 0,8 rpm : 700 Speed Aneroid pressure h: 900 : 275.5...277.5 Del.quantity 1000 : (272.5...280.5) Test Lines : 1 680 750 067 : 5.00 cm3 Spread 1000 : (9.00) Outside diameter x Wall thickness x Lenath mm : 6.00x1.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 50...58 per values ____ Testina: 1st rack travel in: 10.70 BEGINNING OF DELIVERY Speed rpm : 925...935 Test pressure, bar: 25...27

2nd rack travel in: 4.00

rpm : 985...1015 Speed 3rd rack travel in: 4.00 Speed rpm : 995...1025 4th rack travel in: 1130 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 4.6 : 250 Speed rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 : 380...440 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 700 Pressure hPa : 900 : 11.70...11.80 Rack travel mm Measurement $1/\min : 700$ Speed 1st pressure hPa : -Rack travel in m: 8.60...8.80 2nd pressure hPa : 240 Rack travel in m: 8.90...9.00 3rd pressure hPa : 770 Rack travel in m: 11.30...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 925...935

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 260.0...280.0 1000 s: (250.0...290.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

020

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : PEN 12,2 b1 : 11.11.88 Test sheet Edition Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Tolerance + -., .: 0.50 (0.75) : 0 401 876 761A Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PE6P12OA32ORS32O6 : 0 411 826 773 BASIC SETTING EP type number Governor Governor design: : RSV250...900P4A374-6 rpm : 700 1st speed : 0 421 833 283 Governer no. Rack travel in mm : 12.10...12.20 Customer-spec. information : VOLVO-PENTA Del.quantity cm3/: 29.0...29.2 Customer : TAMD122 A 100 s: (28.7...29.5) Engine 1st version kW : 280.0 Spread cm3 : 0.5Rated speed : 1800 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5 Test oil inlet temp. , C : 38...42 Overflow valve 100 s: (0.7) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 rpm : 800 assembly : 1 688 901 019 Speed Rack travel in mm : 0.30...1.40 Opening : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar 1st version Orifice plate : 0,8 rpm : 700 diameter mm Speed Aneroid pressure h: 1200 : 290.5...292.5 Del.quantity 1000 : (287.5...295.5) : 1 680 750 067 Test lines : 5.00 cm3 Spread 1000 : (9.00) Outside diameter x Wall thickness : 6.00X1.50X1000 RATED SPEED x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 54...62 per values ____

Testing:

1st rack travel in: 11.10

2nd rack travel in: 4.00

Speed rpm : 1020...1030

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1080...1110 Speed 3rd rack travel in: 4.00 : 1090...1120 Speed rpm 4th rack travel in: 1160 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 4.6 rpm : 250 Speed Rack travel in mm : 4.50...4.70 Rack travel in mm : 2.00 rpm : 380...440 Speed Aneroid/Altitude Compensator Test 1st version Setting : .700 Speed man Pressure hPa : 1200 Rack travel mm : 12.10...12.20 Measurement 1/min : 700 Speed 1st pressure hPa : -Rack travel in m: 8.60...8.80 2nd pressure hPa : 360 Rack travel in m: 8.90...9.00 3rd pressure hPa : 1030 Rack travel in m: 11.70...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Del.quantity cm3/: 177.0...179.0 1000 s: (174.0...182.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.10 Speed rpm : 1020...1030 STARTING FUEL DELIVERY

: 100

rpm

Speed

C22

Del.quantity cm3/: 290.0...310.0 1000 s: (280.0...320.0)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 7,1 c 2 Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 768

Injection pump

Pump designation : PE6P110A320RS3147 EP type number : 0 411 816 743

Governor

Governor design. : RSV650...750P4A421-6

Governer no. : 0 421 833 309

Customer-spec. information

: VOLVO-PENTA Customer

: TID 71AG Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 650.0 2nd speed

Rack travel in mm : 4.0...4.2 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 164.0...166.0 Del.quantity

1000 : (161.0...169.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.50

Speed rpm: 747...752 2nd rack travel in: 4.00

Speed rpm: 777...790 4th rack travel in: 930

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 31...39

Setting point w/out bumper spring Speed : 650

rpm Rack travel in mm: 4.1 Speed : 650 rpm

Rack travel in mm : 4.00...4.20

Rack travel in mm : 2.00

Speed rpm : 630...690

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50 Speed rpm : 747...752 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...180.0 1000 s: (146.0...184.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed : 650 rpm Rack travel in mm : 4.00...4.20

Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3: 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Test sheet : VOL 12,2 c Edition : 09.06.89 Replaces Test oil : ISO-4113 Phasing Combination no. : 0 401 876 769 Injection pump Pump designation : PE6P12OA32ORS32O6-2 : 0 411 826 784 EP type number BASIC SETTING Governor Governor design: : RSV250..1300P0A374-8 1st speed : 0 421 833 320 Governer no. Customer-spec. information Customer : VOLVO-TRUCK Engine : TAMD71A PD 1st version kW : 280.0 Spread : 2600 Rated speed TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. , C : 38...42 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 1st version Test lines : 1 680 750 067 Speed Del.quantity Outside diameter x Wall thickness : 6.00X1.50X1000 cm3 x Length mm Spread (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. RATED SPEED

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 rpm: 700 Rack travel in mm : 10.70...10.80 Del.guantity cm3/: 23.5...23.7 100 s: (23.2...24.0) cm3 : 0.5100 s: (0.9) rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.5100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.40 Governor spring pre-tension Click setting x : 2.50 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 700 Aneroid pressure h: 1200 : 235.5...237.5 1000 : (232.5...240.5) : 5.00 1000 : (9.00) 1st version Control lever position degrees: 48...56 Testing:

: 3.50...3.60

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

1st rack travel in: 9.70 rpm : 1295...1305 Speed 2nd rack travel in: 4.00 Speed rpm : 1375...1405 3rd rack travel in: 4.00 rpm : 1385...1415 Speed 4th rack travel in: 1500 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 4.6 : 250 Speed rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed : 390...450 rpm Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm Pressure hPa : 1200 Rack travel mm : 10.70...10.80 Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 7.40...7.60 2nd pressure hPa : 960 Rack travel in m: 10.40...10.50 3rd pressure hPa : 400 Rack travel in m: 7.80...8.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) **BREAKAWAY** 1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1295...1305 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

LOW IDLE

Speed : 250 rpm Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 5.00 Spread 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 h : 07.02.89 Edition : 26.6.87 Replaces : ISO-4113 Test oil Combination no. : 0 401 878 710 Injection pump Pump designation : PE8P110A320LS3845 EP type number : 0 411 818 715 Governor : RSV350...750P0A824-1 Governor design. : 0 421 833 270 Governer no. Customer-spec. information Customer : DAIMLER-BENZ : 0M442 Engine : 163.0 1st version kW : 1500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm

: 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-Phasing : 0-45-90-135-180-225-Phasing : 270-315 Tolerance + - ... 0.50 (0.75)Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.90...14.00 Del.guantity cm3/: 14.8...15.0 100 s: (14.5...15.2) cm3 : 0.4Spread 100 s: (0.8) 2nd speed rpm : 350.0 Rack travel in mm : 7.9...8.2 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3
Speed rpm: 800
Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 3.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Del.quantity : 148.0...152.5) : 4.00 Spread cm3 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 22...30

x Length mm

Testing: 1st rack travel in: 12.90 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm: 780...793 4th rack travel in: 1000 Speed rpm: 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 10...18 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.1 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 7.00...7.20 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 14,6 p 5 : 24.05.89 Test sheet

Edition : 1.7.88 Replaces

: ISO-4113 Test oil

: 0 401 878 711 Combination no.

Injection pump

Pump designation : PE8P12OA32OLS3816-10

EP type number : 0 411 828 715

Governor

: RSV650...1150P0A823-Governor design.

: 0 421 833 280 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M422A Engine

1st version kW : 206.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 1180 1st speed

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 3.3...3.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

: 133.0...135.0 Del.quantity 1000 : (130.0...138.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing: 1st rack travel in: 8.30 Speed rpm : 1210...1220 2nd rack travel in: 4.00 Speed rpm : 1235...1255 4th rack travel in: 1400 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm: 3.4 Speed rpm : 650
Rack travel in mm : 3.30...3.60
Rack travel in mm : 2.00 Speed rpm : 655...695 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1180 Rack travel in m: 9.30...9.40 rpm : 950 2nd speed Rack travel in m: 10.80...11.10 3rd speed rpm : 1050 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version : 950 Speed rpm Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0) Spread cm3: 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.30 Speed rpm : 1210...1220 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

: 650

rpm

LOW IDLE

Speed

D02

Remarks:

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

APPLICATION

Forage harvester

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-3-5-4-2 Firing order Test sheet : MAN 10,0 a Edition : 07.04.89 : 5.8.88 : ISO-4113 Replaces Phasing : 0-72-144-216-288 Test oil Combination no. : 0 402 035 020 Tolerance + - . . . : 0.50 (0.75)Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS512 EP type number : 0 412 025 021 BASIC SETTING Go ∋rnor Governor design. : RQ300/1100PA813-1 1st speed rpm: 750 Governer no. : 0 421 801 405 Rack travel in mm : 10.70...10.80 Customer-spec. information Del.quantity cm3/: 20.9...21.1 Customer : MAN : D2865LF 100 s: (20.6...21.4) Engine : 191.0 : 2200 cm3 : 0.51st version kW Spread Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 3.9...4.1 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. , C : 38...42 100 s: (0.9...2.1) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 Speed rpm: 600 Rack travel in mm: 19.20...20.80 assembly : 1 688 901 019 Openina FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 207...210 Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 1000 : 209.0...211.0 Del.quantity 1000 : (206.0...214.0) cm3 : 5.00 1000 : (9.00) Test lines : 1 680 750 067 Spread Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point:

: 600

rpm Rack travel in mm : 20.0

1st rack travel in: 9.10

Testing:

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 : 1180...1210 rpm Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 4.0 Testing: : 100 Speed rpm Minimum rack trave: 5.50 : 300 rpm Rack travel in mm : 3.90...4.10 Rack travel in mm : 2.00 Speed rpm : 320...380 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 10.20...10.30 rpm : 750 2nd speed Rack travel in m: 11.00...11.20 3rd speed rpm : 920 Rack travel in m: 10.60...10.80 Aneroid/Altitude Compensator Test 1st version Settina pm : 500 hPa : 1000 rom Speed Pressure Rack travel mm : 10.70...10.80 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 7.70...7.90 2nd pressure hPa : 125 Rack travel in m: 8.10...8.20 3rd pressure hPa : 430 Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

rpm : 1100

Del.quantity cm3/: 198.0...202.0 1000 s: (195.0...205.0) Aneroid pressure h: 1000 Speed rpm : 650 Del.quantity cm3/: 200.0...206.0 1000 s: (197.0...209.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 125.0...127.0 1000 s: (122.0...130.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 rpm : 1145...1160 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Remarks:

: MAN-NR. 2-7881

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : MAN 11,9a37 : 6-2-4-1-5-3 Test sheet Firina order : 24.05.89 Edition : 10.2.89 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 0 402 036 077 Tolerance $+ - \frac{1}{2}$: 0.50 (0.75) Injection pump Pump designation: PES6P120A720/3LS470-Time to cyl. no. : 6 EP type number : 0 412 026 050 BASIC SETTING Governor rpm : 750 Governor design. : RQ300/1100PA813-6 1st speed Governer no. : 0 421 801 466 Rack travel in mm : 11.40...11.50 Customer-spec. information Del.quantity cm3/: 20.0...20.2 Customer 100 s: (19.7...20.5) : D2866TUH/001 Engine : 213.0 cm3 : 0.51st version kW Spread Rated speed : 2200 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.1...5.3 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. , C : 38...42 100 s: (0.9...2.1) cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 750 : 1 688 901 019 assembly Rack travel in mm : 14.70...16.30 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750 Aneroid pressure h: 1000 Del.quantity : 200.0...202.0 1000 : (197.0...205.0) Test lines : 1 680 750 067 : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED 1st version (A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant. Setting point: per values ____ Speed rom Rack travel in mm : 15.5

Testing:

005

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

1st rack travel in: 10.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.2 Testina: Speed rpm : 100 Minimum rack trave: 6.70 Speed rpm: 300
Rack travel in mm: 5.10...5.30
Rack travel in mm: 2.00
Speed rpm: 390...430 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.80...11.90 and speed rpm : 1100 Rack travel in m: 11.70...11.90 2nd speed rpm Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1000 Speed rpm Pressure Rack travel mm : 11.40...11.50 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 190 Rack travel in m: 9.10...9.20 3rd pressure hPa : 350 Rack travel in m: 10.10...10.50 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1100 Del.quantity cm3/ : 213.0...219.0 1000 s: (210.0...222.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 119.0...121.0 1000 s: (116.0...124.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1145...1160 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity_cm3/ : 215.0...235.0 1000 s: (211.0...239.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 5.10...5.30 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.0...21.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7893

At start of delivery, locating pin must latch into slit in pointer.

APPLICATION

Omnibus

006

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 : MAN 11,9a38 Test sheet Firing order : 09.06.89 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 0 402 036 078 Combination no. Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 : 0 412 026 050 EP type number BASIC SETTING Governor Governor design. : RQ300/1100PA813-8 rpm : 750 1st speed : 0 421 801 483 Governer no. Rack travel in mm : 10.40...10.50 Customer-spec. information Customer Del.quantity cm3/: 18.3...18.5 100 s: (18.0...18.8) : D2866LF Engine cm3 : 0.51st version kW : 213.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rask travel in mm: 4.7...4.9 Test oil inlet temp. , C : 38...42 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1) cm3 : 0.8Overflow valve Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 600 assembly Rack travel in mm : 14.70...16.30 **Opening** : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version : 0,8 Speed rpm : 750 diameter mm : 1 680 750 067 Test lines Spread cm3 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 RATED SPEED 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Aneroid pressure h: 1000 Del.quantity : 183.0...188.0) : 5.00 1000 : (9.00) Setting point: : 600 Speed rpm Rack travel in mm: 15.5 Testing:

007

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

1st rack travel in: 8.70 Speed rom : 1145...1160 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 4.8 Testing: : 100 Speed rpm Minimum rack trave: 6.30 : 300 rpm Speed Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 : 340...380 Speed rom TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9.70...9.80 rpm : 750 2nd speed Rack travel in m: 10.40...10.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 10.40...10.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 160 Rack travel in m: 9.80...10.10 START CUT-OUT 1/min : 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1100 Speed Del.quantity cm3/: 178.0...182.0 1000 s: (175.0...185.0)

Aneroid pressure h: 1000 Speed rpm : 650 Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) Aneroid pressure h: 160 Speed rpm : 500 Del.quantity cm3/ : 157.0...169.0 1000 s: (154.0...172.0) 500 Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.70 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0)

LOW IDLE

Remarks:

: MAN-NR. 2-7760

800

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11,9a39 Edition : 02.06.89 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 : 0 402 036 079 Combination no. Tolerance + -., .: 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 EP type number : 0 412 026 050 BASIC SETTING Governor Governor design. : RQV300...1100PA876 rpm : 750 1st speed : 0 421 813 661 Governer no. Rack travel in mm : 10.30...10.40 Customer-spec. information Del.quantity cm3/: 18.3...18.5 Customer : MAN 100 s: (18.0...18.8) : D2866LF Engine cm3 : 0.51st version kW : 213.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Rack travel in mm : 4.8...5.0 Test oil Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3: 0.8 inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 100 s: (1.2) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.70...2.00 2nd speed rpm : 850 Opening : 207...210 pressure, bar travel mm : 6.00...6.20 3rd speed rpm : 1100 Orifice plate : 8.10...8.30 diameter mm : 0,8 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 075 Control-lever position Degree: -1 Speed rpm : 1130 Rack travel in mm : 15.20...17.80 Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 750 Aneroid pressure h: 1000 Del.quantity : 183.0...185.0 1000 : (180.0...188.0) per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Spread cm3 : 5.001000 : (9.00) RATED SPEED 1st version Control lever position degrees: 49...57 Testina: 1st rack travel in: 8.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 16...24 Testing: : 100 Speed rpm Minimum rack trave: 6.30 rpm : 300 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 310...410 Speed TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 10.30...10.40 d speed rpm : 1100 2nd speed Rack travel in m: 9.70...9.80 3rd speed rpm : 850 Rack travel in m: 10.10...10.20 4th speed rpm : 975 Rack travel in m: 9.80...10.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 1000 : 10.30...10.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 160

Rack travel in m: 9.80...10.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1100 Speed Del.quantity cm3/: 178.0...182.0 1000 s: (175.0...185.0) Aneroid pressure h: 1000 Speed rpm : 650 Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) Aneroid pressure h: 160 500 rpm Del.quantity cm3/: 157.0...169.0 1000 s: (154.0...172.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 4.80...5.00 Del.guantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

010

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 10,0 u Edition : 08.05.89 Replaces : ISO-4113 Test oil Combination no. : 0 402 045 702 Injection pump Pump designation : PES5P110A820LS3218 EP type number : 0 412 015 700 Governor Governor design. : RQV300..1100PA916-2 Governer no. : 0 421 813 750 Customer-spec. information : DAIMLER-BENZ Customer : 0M449 Engine 1st version kW : 140.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _ C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar : 1 680 750 015 Test lines Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45) Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.40...10.50

Del.guantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm : 6.8...7.2 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel mm

2nd speed rpm : 450 travel mm

: 3.40...3.80 3rd speed rpm : 1150

: 7.90...8.30 travel mm

rpm : 1225 4th speed

: 9.10...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 135.0...137.0 Del.quantity 1000 : (132.5...139.5)

cm3 : 4.00 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 50...58 Testing: 1st rack travel in: 9.50 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1220 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 20...28 Testing: Speed : 200 rpm Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.80...7.20 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 110.0...114.0 1000 s: (107.0...117.0) cm3 : 5.00Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50

rpm : 1140...1150

1000 s: (136.0...164.0)

rpm : 100 Del.quantity cm3/: 140.0...160.0

Remarks:

Speed

Speed

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.30...4.40 : (4.25...4.45) Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 Note remarks Firing order : MB 10,0 u 1 Test sheet Edition : 08.05.89 Replaces Test oil : ISO-4113 Phasing : 0-72-144-216-288 Tolerance + - ... : 0.50 (0.75)Combination no. : 0 402 045 703 Injection pump Time to cyl. no. : 5 Pump designation : PES5P110A820LS3218 : 0 412 015 700 EP type number BASIC SETTING Governor Governor design. : RQV300..1100PA916-3 1st speed rpm: 1100 : 0 421 813 751 Governer no. Rack travel in mm : 11.20...11.30 Customer-spec. information Del.quantity cm3/: 14.4...14.6 Customer : DAIMLER-BENZ 100 s: (14.1...14.8) : 0M449 Engine cm3 : 0.41st version kW : 147.0 Spread : 2200 Rated speed 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Test oil Rack travel in mm : 6.8...7.2 inlet temp., C : 38...42 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.10...1.40 Test nozzle holder travel mm : 0 681 343 009 rpm : 450 2nd speed assembly : 3.40...3.80 rpm : 1150 travel mm 3rd speed Opening : 7.90...8.30 rpm : 1225 pressure, bar : 172...175 travel mm 4th speed : 9.10...9.70 travel mm Test Lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80 x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant.

1st version Speed

rpm : 1100

Del.quantity : 144.0...148.5)

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00 cm3 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 50...58 Rack travel in mm : 16.5 Testing: 1st rack travel in: 10.20 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 20...28 Testing: Speed rpm : 200 Minimum rack trave: 9.00 : 300 rpm Rack travel in mm : 6.80...7.20 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 121.0...125.0 1000 s: (118.0...128.0) cm3 : 5.00 Spread 1000 s: (9.) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

D14

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 m 1 : 11.05.89 Edition

: 12.2.88 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 335

Injection pump

Pump designation : PES6P120A320RS515 : 0 412 026 053 EP type number

Governor

: RQV300...1150PA527-2 Governor design.

: D 421 815 188 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDRO62030C

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 6,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - . . : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 14.3...14.5

100 s: (14.0...14.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 600.0

Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7) cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm: 300: 1.70...2.10 1st speed

travel mm

rpm : 900 2nd speed

: 5.80...6.20 travel mm

rpm : 1150 3rd speed

: 7.40...7.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150 : 143.0...145.0 Del.quantity 1000 : (140.0...148.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 57...65 Testing: 1st rack travel in: 9.20 rpm : 1235...1245 Speed 2nd rack travel in: 4.00 Speed rpm : 1305...1335 4th rack travel in: 1450 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 6...14 Testina: Speed rpm : 200 Minimum rack trave: 6.20 rpm : 300 Speed Rack travel in mm : 4.60...4.80 CONSTANT REGULATION Speed rpm : 320...440 TORQUE CONTROL Dimension a mm : 1.80 Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.20...10.30 2nd speed rpm : 750 Rack travel in m: 9.20...9.30 rpm : 500 3rd speed Rack travel in m: 8.60...8.80 4th speed rpm : 350 Rack travel in m: 8.40...8.80 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 120.0...126.0 1000 s: (117.0...129.0) rpm : 500 Speed Del.quantity cm3/: 64.0...70.0 1000 s: (61.0...73.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: -1.00 Speed rpm : 1235...1245 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

LOW IDLE

Remarks:

Start-of-delivery mark 6, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 11,7 a 3 : 14.04.89 : 9.3.87 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 046 751 Injection pump Pump designation : PES6P110A820LS3131 EP type number : 0 412 016 715 Governor Governor design. : RQ300/1100PA723 : 0 421 801 265 Governer no. Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M427H : 177.0 1st version kW Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length rim

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values ____

: 4.30...4.40 Prestroke mm : (4.25...4.45) Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 6 BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 11.10...11.20 Del.guantity cm3/: 14.0...14.2 100 s: (13.7...14.5) Spread cm3 : 0.4100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Spread cm3 : 0.4 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm: 550 Rack travel in mm: 14.70...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed : 140.0...142.0 Del quantity 1000 : (137.0...145.0) : 4.00 cm3 Spread 1000 : (8.00)

RATED SPEED

1st version

Setting point: Speed rpm Rack travel in mm: 15.5

Testing: 1st rack travel in: 10.20 rpm : 1140...1150 Speed

2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.2 Testing: Speed rpm: 100
Minimum rack trave: 8.80
Speed rpm: 300
Rack travel in mm: 7.10...7.30
Rack travel in mm: 2.00 : 360...400 Speed rom START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 117.0...121.0 1000 s: (114.0...124.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1140...1150 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

: 3.80...3.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.75...3.95)
Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order Test sheet : MAN 11.9 d Edition : 23.06.89 : 9.3.87 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 : 0 402 046 769 Tolerance + - ... : 0.50 (0.75)Combination no. Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS3167 EP type number : 0 412 026 720 BASIC SETTING Governor Governor design: : RQV300...1100PA667-2 rpm : 1100 1st speed : 0 421 813 524 Governer no. Rack travel in mm : 12.60...12.70 Customer-spec. information Del.guantity cm3/: 23.4...23.6 Customer : D2866LE 100 s: (23.1...23.9) Engine : 300.0 : 2200 cm3 : 0.51st version kW Spread Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.7...2.3 inlet temp. , C : 38...42 100 s: (1.4...2.6) Overflow valve Spread cm3 : 0.8100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 300 : 1.20...1.40 Opening travel mm rpm : 500 : 3.30...3.50 rpm : 900 : 207...210 2nd speed pressure, bar travel mm Orifice plate 3rd speed : 5.90...6.20 diameter mm : 0,8 travel mm rpm : 1100 4th speed : 7.60...7.80 travel mm Test lines : 1 680 750 067 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1175 : 6.00x3.00x1000 Speed x Length mm

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 234.0...236.0 1000 : (231.0...239.0)

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 11.60 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 13...21

Testing:

Speed : 100 rpm Minimum rack trave: 7.50 rpm : 300

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 330...445 Speed

START CUT-OUT

1/min: 220 (240) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

APPLICATION : 2-7656

Ship

020

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: KHD 9,6 u 4 Test sheet Edition : 16.06.89 Replaces Test oil : 14.4.89 : ISO-4113

Combination no. : 0 402 046 806

Injection pump

Pump designation : PES6P110A720RS3104

EP type number : 0 412 016 712

Governor

Governor design. : RQV300...1150PA850-4

Governer no. : 0 421 813 745

Customer-spec. information : KHD Customer

: BF6L513RC Engine

1st version kW : 210.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8

Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.9) cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

5th speed rpm : 1330

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1190 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900
Del.quantity: 165.0...167.0
1000: (162.0...170.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 13.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1315...1345 4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Testing:

Speed rpm : 100 Minimum rack trave: 9.20

Speed rpm : 300 Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

rpm : 300...550 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150 Rack travel in m: 14.00...14.10

rpm : 750 2nd speed

Rack travel in m: 14.20...14.40

rpm : 850 3rd speed

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

: 14.20...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375 Rack travel in m: 12.70...12.90

START CUT-OUT

1/min : 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750 Del.quantity cm3/ : 170.0...174.0 1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

022

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 6,2 f Edition : 07.07.89 Replaces : ISO-4113 Test oil Combination no. : 0 402 046 811 Injection pump Pump designation : PES6P110A320RS3233 EP type number : 0 412 016 728 Governor Governor design. : RQV275...1175PA833-4 Governer no. : 0 421 813 762 Customer-spec. information Customer : RVI : MIDR 060226D Engine 1st version kW : 166.0 Rated speed : 2350 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY

```
Firing order
                     : 1-5-3-6-2-4
                     : 0-60-120-180-240-300
Phasina
Tolerance + - ... : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
                rpm: 1175
1st speed
Rack travel in mm : 13.50...13.60
Del.guantity cm3/: 11.6...11.9
               100 s: (11.3...12.1)
               cm3 : 0.4
Spread
               100 s: (0.7)
2nd speed rpm : 275.0
Rack travel in mm : 4.8...5.0
Del.quantity cm3/ : 2.8...3.3
100 s: (2.5...3.5)
Spread
               cm3 : 8.4
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed rpm: 250
                    : 0.40...0.60
  travel mm
2nd speed rpm : 450
                    : 2.90...3.50
  travel mm
3rd speed rpm : 800
                     : 4.60...5.00
  travel mm
4th speed rpm : 1175
                     : 6.90...7.10
  travel mm
GUIDE SLEEVE POSITION
Control-lever position
             Degree: -1 rpm : 1330
Speed
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed rpm: 1175
Aneroid pressure h: 1000
Del.quantity: 116.0...119.0
1000: (113.5...121.5)
Spread: 4.00
```

1000 : (7.50)

RATED SPEED

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30 : (4.15...4.35) Rack travel in mm : 18.00...21.00

D23

1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 12.50 Speed rpm : 1255...1265 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 14...22 Testina: Speed rpm Minimum rack trave: 7.20 rpm : 275 Speed Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 250...320 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1000 Speed rpm Pressure : 13.50...13.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : Rack travel in m: 9.80...10.00 2nd pressure hPa : 400 Rack travel in m: 12.90...13.00 3rd pressure hPa : 160 Rack travel in m: 10.90...11.30 START CUT-OUT 1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

: 700

: 500

Del.quantity cm3/: 111.5...116.5 1000 s: (108.5...119.5)

Aneroid pressure h: 1000

Aneroid pressure h: -

rpm

rom

Del.quantity cm3/: 47.5...50.5 1000 s: (45.0...53.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: -1.00 Speed rpm : 1255...1265 STARTING FUEL DELIVERY : 100 Speed man Del.quantity cm3/: 85.0...105.0 1000 s: (81.0...109.0) LOW IDLE Speed rpm : 275 Rack travel in mm : -8.50...-8.70 Del.quantity cm3/: 28.0...33.0 1000 s: (25.5...35.5) cm3 : 84.50 Spread Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: DEE 15,6 a Test sheet : 13.7.89 Edition : 2.5.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 068 700

Injection pump

Pump designation : PES8P110A120RS3044

Governor

Governor design. : RSV400...1050P2/435D

Customer-spec. information : JOHN DEERE Customer

: 8955 T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6,00X1,50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.75...2.85 Prestroke mm

: (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5-6-3-4-2-7-8 Firing order

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.2)

cm3 : 0.4Spread

100 s: (0.75)

rpm : 400 2nd speed

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 2.2...2.8

100 s: (-)

cm3 : 0.4Spread

100 s: (0.75)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 650

: 147.0...149.0 Del.quantity 1000 : (144.0...152.0)

cm3 Spread

: (7.5) 1000

RATED SPEED

1st version Control lever

position degrees: 39.5...47.5

Testing:

1st rack travel in: 9.00

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1275

rpm : 0.30...1.70Speed

LOW IDLE 1

D25

Control lever

position degrees: 17...25

Testing:

Speed rpm : 100 Minimum rack trave: 16.00 rpm : 400

Rack travel in mm: 5.10...5.30

Rack travel in mm : 2.00

rpm : 565...625 rpm : 800

Speed Speed Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 10.00...10.10

2nd speed rpm : 750

Rack travel in m: 10.90...11.20 3rd speed rpm : 550

Rack travel in m: 9.50...9.60

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rom Pressure

rpm : 550 hPa : 380 mm : 10.70...10.80 Rack travel mm

Measurement

Speed $1/\min : 550$

1st pressure hPa : 270

Rack travel in m: 9.70...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 650

Speed rpm : 750 Del.quantity cm3/ : 163.5...166.5

1000 s: (160.0...170.0)

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/ : 130.0...134.0 1000 s: (127.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1095...1105 STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...200.0

1000 s: (-)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1155 Del.quantity cm3/ : 37.0...47.0 1000 s: (-)

Remarks:

Start-of-delivery mark 16, cam angle

after start of delivery cyl. 8

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 10,0 m1 Test sheet : 14.04.89 Edition Replaces Test oil : ISO-4113 : 0 402 075 701 Combination no. Injection pump Pump designation : PES5P110A720LS3221 EP type number : 0 412 015 701 Governor : RSV350...1100P0A487-Governor design. Governer no. : 0 421 833 315 Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M449 1st version kW : 147.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Rack travel in mm : Firing order :	(4.254.45) 9.0012.00 1- 3- 5- 4- 2
Phasing :	0-72-144-216-288
Tolerance + -, :	0.50 (0.75)
Time to cyl. no. :	5
BASIC SETTING	
1st speed rpm:	1080
Rack travel in mm :	12.1012.20
Del.quantity cm3/:	14.414.4
100 s:	(14.114.6)
Spread cm3 :	0.4
100 s:	(0.8)
2nd speed rpm : Rack travel in mm : Del.quantity cm3/ : 100 s: Spread cm3 :	6.36.7 1.21.8 (0.92.0) 0.4
100 s:	_
GUIDE SLEEVE POSITI Control-lever posit Degree: Speed rpm : Rack travel in mm :	ion -3
FULL LOAD DELIV. AT	FULL LOAD STOP
1st version Speed rpm : Del.quantity : 1000 : Spread cm3 : 1000 :	1080 144.0144.0 (141.5146.5) 4.00 (8.00)
RATED SPEED	
1st version Control lever position degrees:	4048
Testing: 1st rack travel in: Speed rpm : 2nd rack travel in:	11301140

: 4,30...4,40.

Prestroke mm

: 1190...1220 Speed rpm 4th rack travel in: 1250 rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever position degrees: 16...24

Setting point w/out bumper spring

: 350 rpm Rack travel in mm : 6.5 : 350 Speed rpm

Rack travel in mm : 6.30...6.70 Rack travel in mm : 2.00

: 470...530 Speed man

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 124.0...128.0 1000 s: (121.0...131.0)

Spread cm3 : 6.00 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50

Speed : 1130...1140 rpm

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0

•

1000 s: (136.0...164.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.30...4.40 : (4.25...4.45) Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : MB 11,7 d 4 : 29.03.89 Test sheet Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ... : 0.50 (0.75): 0 402 076 734 Combination no. Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS3131-1 : 0 412 016 717 BASIC SETTING EP type number Governor Governor design. : RSV350..1100P0A487-9 rpm : 1080 1st speed : 0 421 833 316 Governer no. Rack travel in mm : 11.00...11.10 Customer-spec. information Del.quantity cm3/: 13.5...13.7 Customer : DAIMLER-BENZ Engine : 0M447 100 s: (13.2...13.9) 1st version kW : 168.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Test oil Rack travel in mm : 6.8...7.1 Del.quantity cm3/: 1.4...2.0 inlet temp. , C : 38...42 100 s: (1.1...2.3) Overflow valve cm3 : 0.4Spread 100 s: (0.7) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Degree: -3 Overflow Speed rpm: 800 Rack travel in mm: 0.30...0.70 quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 Governor spring pre-tension assembly Click setting x : ? Opening FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 172...175 1st version Test lines : 1 680 750 015 rpm : 1080 Speed : 135.0...137.0 Del.quantity 1000 : (132.5...139.5) Outside diameter x Wall thickness : 4.00 Spread cm3 1000 : (8.00) : 6.00X1.50X600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 45...53 BEGINNING OF DELIVERY

Testina:

1st rack travel in: 10.00

Test pressure, bar: 25...27

rpm : 1130...1140 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 350° Speed Rack travel in mm: 6.9 Testing: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 350 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 rpm : 400...440 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 111.0...115.0 1000 s: (108.0...118.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1130...1140 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 21,9 j Test sheet Edition : 24.05.89 Replaces : 18.9.87 Test oil : ISO-4113

Combination no. : 0 402 640 809

Injection pump

Pump designation : PE12P12OA320LS7813

: 0 412 620 809 EP type number

Governor

Governor design. : RQV350...1050PA870

: 0 421 813 640 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

1st version kW : 552.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.10...4.50 travel mm

rpm : 1100 3rd speed

: 7.60...8.00 travel mm

: 1200 4th speed rpm

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 2nd pressure hPa : 600 Rack travel in m: 13.40...13.60 rpm : 650 Speed Aneroid pressure h: 850 3rd pressure hPa : 1200 Del.quantity : 224.0...229.0) Rack travel in m: 14.60...14.80 4th pressure hPa : 1400 Rack travel in m: 15.20...15.40 5th pressure hPa : 500 Rack travel in m: 9.00...9.40 : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED START CUT-OUT 1st version 1/min: 270 (290) Speed Control lever position degrees: 64...72 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 14.50 Speed rpm : 1090...1100 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1700 : 1050 Speed rpm : 1190...1220 Speed rpm Del.quantity cm3/: 256.0...259.0 4th rack travel in: 1300 1000 s: (253.0...262.0) Speed rpm : 0.00...1.00cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: 1700 Control lever Speed rpm : 900 Del.quantity cm3/ : 270.0...274.0 1000 s: (267.0...277.0) position degrees: 14...22 Testing: Speed : 100 cm3 : 8.00Spread man 1000 s: (12.0) Minimum rack trave: 7.70 Aneroid pressure h: 1700 : 350 rpm rpm : 1050 Rack travel in mm : 5.20...5.40 Speed Del.quantity cm3/: 185.0...188.0 * 1000 s: (182.0...191.0) CONSTANT REGULATION rpm : 350...600 cm3 : 8.00 Speed Spread 1000 s: (12.0) Aneroid pressure h: -TORQUE CONTROL : 500 Dimension a mm : 0.50 Speed rpm Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 15.30...15.50 cm3 : 3.00Spread rpm : 1000 1000 s: (12.0) 2nd speed Rack travel in m: 15.60...15.80 d speed rpm : 950 3rd speed Rack travel in m: 15.80...16.00 **BREAKAWAY** Aneroid/Altitude 1st version Compensator Test 1mm rack travel less than full load rack tr: 14.50 rpm : 1090...1100 1st version Speed Setting : 600 STARTING FUEL DELIVERY Speed rpm hPa : 850 Pressure : 14.30...14.50 Rack travel mm Speed rpm Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.80...11.00 Remarks:

E04

* = Set at reduced-delivery stop.

6

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 22,0 b : 07.07.89 Test sheet Edition : 31.3.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 640 812

Injection pump

Pump designation : PE12P12OA520LS7820

: 0 412 620 814 EP type number

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : OM 444 LA

1st version kW : 736.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance $+ - \dots : 0.50 (0.75)$

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 31.0...31.2

100 s: (30.7...31.5)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...6.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.40 travel mm

2nd speed

rpm : 500 : 3.00...3.50 travel mm

rpm : 800 3rd speed

: 4.30...4.80 travel mm

rpm : 1200 4th speed

: 8.30...8.80 travel mm

rpm : 1250 5th speed

: 9.30...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Aneroid pressure h: 1800 : 310.0...312.0 Del.quantity 1000 : (307.0...315.0) : 6.00 Spread cm3 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testina: 1st rack travel in: 13.30 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...48 Testing: Speed rpm : 250 Minimum rack trave: 7.00 : 350 Speed rpm Rack travel in mm : 5.00...5.60 CONSTANT REGULATION Speed rpm : 350...600 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 7.60...7.90 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 300 Rack travel in m: 9.00...9.10 2nd pressure hPa : 1100 Rack travel in m: 13.20...13.50 START CUT-OUT 1/min: 310 (330) Speed FUEL DELIVERY CHARACTERISTICS

E07

1st version Aneroid pressure h: 1800 : 750 Speed rpm Del.quantity cm3/: 301.0...311.0 1000 s: (298.0...314.0) cm3 : 10.00 Spread 1000 s: (15.0) Aneroid pressure h: 1800 Speed rpm : 1150 Del.quantity cm3/ : 240.0...243.0 * 1000 s: (237.0...246.0) cm3 : 10.00 Spread 1000 s: (15.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 120.0...122.0 1000 s: (117.0...125.0) cm3 : 10.00Spread 1000 s: (15.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

: 4.50...4.60 : (4.45...4.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order Test sheet : MAN 21,0 b Edition : 16.06.89 Replaces : ISO-4113 Test oil Phasing : 0-45-60-105-120-165-Combination no. : 0 402 640 815 180-225-240-285-300-Phasing : 345
Tolerance + -, : 0.50 (0.75) Injection pump Pump designation : PE12P120A520LS7824 EP type number : 0 412 620 816 Time to cyl. no. : 12 Governor Governor design. : RQV250...1150PA902-2 BASIC SETTING : 0 421 813 760 Governer no. rpm : 1150 1st speed Customer-spec. information Rack travel in mm : 13.20...13.30 Customer : MAN : D2842LYE Del.quantity cm3/: 28.9...29.1 Engine 100 s: (28.6...29.4) 1st version kW : 735.0 : 2300 Rated speed cm3 : 0.5Spread TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. ., C : 38...42 rpm : 500 2nd speed Rack travel in mm : 8.90...9.10 Del.quantity cm3/ : 14.9...15.1 100 s: (14.6...15.4) Overflow valve : 1 417 413 025 cm3 : 0.8Spread 100 s: (1.2) Inlet press., bar: 1.50 rpm : 250 3rd speed Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 * 100 s: (-) Test nozzle holder : 1 688 901 019 assembly Opening. : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate diameter mm : 0,8 GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.20...1.40 travel mm : 1 680 750 067 : 450 Test lines 2nd speed rpm : 3.10...3.70 : 750 travel mm Outside diameter 3rd speed rpm : 5.80...6.20 rpm : 1150 x Wall thickness travel mm : 6.00x1.50x1000 x Length mm 4th speed : 9.50...9.70 travel mm rpm : 1400 (A) Injection pump setting values 5th speed Insp. values in parentheses Set equal delivery quant. travel mm : 13.00...14.00 GUIDE SLEEVE POSITION per values ___ Control-lever position Degree: -1 Speed rpm : 1200 Rack travel in mm : 15.20...17.80 BEGINNING OF DELIVERY Test pressure, bar: 25...27

FULL LOAD DELTY, AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 1st version Speed Aneroid pressure h: 1300 Del.quantity : 289.0...291.0 1000 : (286.0...294.0) Spread cm3 : 5.00 1000 : (9.00) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control lever position degrees: 58...66 1st version 1mm rack travel less than Testing: 1st rack travel in: 12.20 full load rack tr: 12.20 rpm : 1190...1200 Speed Speed rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1275...1315 STARTING FUEL DELIVERY 4th rack travel in: 1400 Speed rpm : 0.00...1.00 Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * 1000 s: (-) LOW IDLE 1 Control lever position degrees: 16...24 Speed rpm : 100 Del.quantity cm3/ : - ** Testina: 1000 s: (-) rpm : 100 Speed Minimum rack trave: 8.90 Rack travel in mm : 17.50 Speed rpm: 250 Rack travel in mm: 7.30...7.50 Rack travel in mm: 2.00 HIGH IDLE rpm : 430...490 Speed 1st version Speed rpm : 500** Rack travel in mm : <7.00 Aneroid/Altitude Del.quantity cm3/: <0 1000 s: (-) Compensator Test 1st version 2nd version Speed rpm : 500** Rack travel in mm : <7.50 Settina rpm : 500 hPa : 1300 Speed Del.quantity cm3/: <50.0 1000 s: (-) Pressure Rack travel mm : 13.20...13.30 3rd version Measurement 1/min : 500rpm : 500 Speed Speed Rack travel in mm: 8.20 1st pressure hPa : -Del.quantity cm3/: 125.0 Rack travel in m: 8.90...9.10 2nd pressure hPa : 100 Rack travel in m: 9.30...9.40 3rd pressure hPa : 470 LOW IDLE Speed rpm: 250 Rack travel in mm: 7.30...7.50 Rack travel in m: 11.80...12.20 Del.quantity cm3/: 52.0...60.0 * START CUT-OUT 1000 s: (-) 1/min : 170 (190) Remarks: Speed

E09

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8, 10 and 12
** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

: 4.50...4.60 : (4.45...4.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7 Note remarks Test sheet : MAN 21,0 c : 07.07.89 Edition Replaces Test oil : ISO-4113 Phasing : 0-45-60-105-120-165-Combination no. : 0 402 640 816 180-225-240-285-300-Phasing : 345 Tolerance + -., : 0.50 (0.75) Injection pump Pump designation : PE12P12OA52OLS7824 EP type number : 0 412 620 816 Time to cyl. no. : 12 Governor Governor design. : RQV250...1150PA902-3 Governer no. : 0 421 813 761 BASIC SETTING Governer no. 1st speed rpm: 1150 Customer-spec. information Rack travel in mm : 12.00...12.10 Customer : MAN : D2842LXE Del.guantity cm3/: 24.9...25.1 Engine 1st version kW : 662.0 Rated speed : 2300 100 s: (24.6...25.4) Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. , C : 38...42 2nd speed rpm : 500 Rack travel in mm : 8.90...9.10 Del.quantity cm3/ : 14.9...15.1 100 s: (14.6...15.4) Overflow valve : 1 417 413 025 cm3 : 0.8Spread Inlet press., bar: 1.50 100 s: (1.2) rpm : 250 3rd speed Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 * 100 s: (-) Test nozzle holder assembly : 1 688 901 019 Opening : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate diameter mm : 0,8 GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 0.90...1.10 travel mm rpm : 450 : 1 680 750 067 2nd speed : 2.90...3.50 rpm : 750 travel mm 3rd speed : 5.50...5.90 rpm : 1150 x Wall thickness travel mm : 6.00x1.50x1000 4th speed

Test lines

Outside diameter

x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 GUIDE SLEEVE POSITION Control-lever position Degree: -1

travel mm

travel mm

5th speed

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

: 9.20...9.40

rpm : 1400 : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1150 Aneroid pressure h: 1300 Del.quantity : 249.0...251.0 1st version Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 : (246.0...254.0) cm3 : 5.00 1000 s: (146.0...154.0) Spread 1000 : (9.00) Spread cm3 : 8.001000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control Lever position degrees: 58...66 1st version 1mm rack travel less than Testing: 1st rack travel in: 11.00 full load rack tr: 11.00 rpm : 1190...1200 rpm : 1190...1200 Speed Speed 2nd rack travel in: 4.00 Speed rpm : 1275...1315 4th rack travel in: 1400 STARTING FUEL DELIVERY Speed rpm : 0.00...1.00 rpm : 100 Speed Del.quantity cm3/: 100.0...120.0 * LOW IDLE 1 1000 s: (-) Control Lever position degrees: 16...24 Speed rpm : 100 Del.quantity cm3/: - ** 1000 s: (-) Testing: Speed rpm : 100 Rack travel in mm: 17.50 Minimum rack trave: 8.90 rpm : 250 Rack travel in mm : 7.30...7.50 HIGH IDLE Rack travel in mm : 2.00 Speed rpm : 430...490 1st version Speed rpm : 500** Rack travel in mm : <7.00...0.00 Aneroid/Altitude Del.quantity cm3/ : <0 1000 s: (-) Compensator Test 1st version 2nd version rpm : 500** Setting Speed : 500 Rack travel in mm : <7.50 Speed rom Del.quantity cm3/: <50.0 1000 s: (-) Pressure hPa : 1300 : 13.20...13.30 Rack travel mm Measurement 3rd version 1/min: 500 rpm : 500 Speed Speed Rack travel in mm : 8.20 Del.quantity cm3/: 125.0 1st pressure hPa : -Rack travel in m: 8.90...9.10 1000 s: (-) 2nd pressure hPa : 100 Rack travel in m: 9.30...9.40 LOW IDLE 3rd pressure hPa : 400 Rack travel in m: 11.30...11.70 Speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 52.0...60.0 * 1000 s: (-) START CUT-OUT 1/min : 170 (190) Speed

E12

Remarks:

: MAN-NR. 2-7959

* applies to cylinders 4, 5, 6, 8 ,10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 22,0 c : 07.07.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 402 640 817 Combination no.

Injection pump

Pump designation : PE12P12OA52OLS7826

EP type number : 0 412 620 817

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

1st version kW : 736.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 31.0...31.2

100 s: (30.7...31.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...6.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.90...2.40

rpm : 500 2nd speed

: 3.00...3.50 travel mm

rpm : 800 3rd speed

: 4.30...4.80 travel mm

rpm : 1200 4th speed

: 8.30...8.80 travel mm

rpm : 1250 5th speed

: 9.30...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 1800 : 310.0...312.0 Del.quantity 1000 : (307.0...315.0) : 6.00 Spread cm3 1000 : (10.00) RATED SPEED 1st version Control Lever position degrees: 60...68 Testing: 1st rack travel in: 13.30 Speed rpm: 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 10...18 Testing: speed rpm : 250 Minimum rack trave: 7.00 : 350 Speed rpm Rack travel in mm : 5.00...5.60 CONSTANT REGULATION Speed rpm : 350...600 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : : 7.60...7.90 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 300 Rack travel in m: 9.00...9.10 2nd pressure hPa : 1100 Rack travel in m: 13.20...13.50 START CUT-OUT 1/min : 310 (330) Speed

FUEL DELIVERY CHARACTERISTICS

E15

1st version Aneroid pressure h: 1800 rpm : 750 Speed Del.quantity cm3/: 301.0...311.0 1000 s: (298.0...314.0) cm3 : 10.00 Spread 1000 s: (15.0) Aneroid pressure h: 1800 : 1150 Speed rpm Del.quantity cm3/: 240.0...243.0 1000 s: (237.0...246.0) cm3 : 10.00Spread 1000 s: (15.0) Aneroid pressure h: -1000 s: (15.0) **BREAKAWAY** 1st version

1mm rack travel less than

full load rack tr: 13.30 rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Phasing : 0-60-120-180-240-300 Test sheet : UNI 13,8 e : 23.06.89 : 26.2.88 Edition Replaces Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 646 859 BASIC SETTING Injection pump Pump designation : PE6P130A720RS7153 1st speed rpm: 950 EP type number : 0 412 636 809 Rack travel in mm : 12.80...12.90 Governor Governor design. : RQV300...950PA883 Governer no. : 0 421 813 690 Del.quantity cm3/: 29.7...30.0 100 s: (29.3...30.3) Customer-spec. information ûustomer : IVECO-UNIC Spread cm3 : 0.6: 8210.42.300 Engine 100 s: (1.0) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0
Rack travel in mm : 3.7...3.9
Del.quantity cm3/ : 1.9...2.5 Test oil inlet temp. , C : 38...42 100 s: (1.5...2.9) cm3 : 1.0Overflow valve Spread : 1 417 413 025 100 s: (1.4) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.10...1.50 Openina travel mm pressure, bar : 207...210 2nd speed rpm : 450 travel mm : 2.80...3.40
3rd speed rpm : 700
travel mm Orifice plate travel mm : 5.10...5.50 4th speed rpm : 950 diameter mm : 0,8 : 7.10...7.30 travel mm : 1 680 750 075 Test lines GUIDE SLEEVE POSITION Outside diameter Control-lever position Degree: -1 Speed rpm : 1000 Rack travel in mm : 15.20...17.80 x Wall thickness : 8.00x3.00x1000 x Lenath mm (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values 1st version rpm : 950 Speed BEGINNING OF DELIVERY Aneroid pressure h: 900 Del.quantity : 297.0...300.0 1000 : (293.5...303.5)

cm3 : 6.00

1000 : (10.00)

Spread

Test pressure, bar: 25...27 : 5.00...5.10 Prestroke mm : (4.95...5.15) Rack travel in mm : 9.00...12.00

E16

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 11.80

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1085...1115 Speed

4th rack travel in: 1200 rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 3...11

Testina:

Speed rpm : 100

Minimum rack trave: 6.30

Speed rpm: 300 Rack travel in mm: 3.70...3.90

CONSTANT REGULATION

rpm : 310...430 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

: 12.80...12.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.50

2nd pressure hPa : 500

Rack travel in m: 11.80...11.90

3rd pressure hPa : 380

Rack travel in m: 9.30...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 157.0...160.0

1000 s: (153.5...163.5)

BREAKAWAY

1st version

E17

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 990...1000

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.70...3.90 Del.quantity cm3/: 19.0...25.0

1000 s: (15.0...29.0)

cm3 : 10.00 Spread

1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 9,0 L 2 Edition : 02.06.89 : 7.2.89 Replaces : ISO-4113 Test oil : 0 402 646 860 Combination no. Injection pump Pump designation : PE6P12OA32ORS7138 : 0 412 626 822 EP type number Governor Governor design. : RQV350...1100PA795-1 : 0 421 813 693 Governer no. Customer-spec. information : SAAB-SCANIA Customer Engine : DS9 52,53,54,55 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

```
: 0-60-120-180-240-300
Phasing
Tolerance + - ... : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
1st speed
               rpm : 700
Rack travel in mm : 12.20...12.30
Del.quantity cm3/: 16.5...16.7
              100 s: (16.2...17.0)
Spread
              cm3 : 0.6
              100 s: (0.9)
2nd speed rpm : 350.0
Rack travel in mm : 4.5...4.9
Del.quantity cm3/ : 2.0...2.4
              100 s: (-)
Spread
              cm3 : 0.3
              100 s: (0.6)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
              rpm : 350
2nd speed
                   : 1.30...1.70
  travel mm
              rpm : 650
3rd speed
                   : 4.10...4.70
  travel mm
              rpm : 1145
4th speed
                   7.80...8.00
  travel mm
             rpm : 1255
5th speed
                   : 8.80...9.20
  travel mm
GUIDE SLEEVE POSITION
Control-lever position
             Degree: -1
Speed rpm : 1180
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
              rpm : 700
Del.quantity : 103.0...170.0)
Spread
             cm3
                   : 6.00
             1000
                  : (9.00)
RATED SPEED
```

Firing order : 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: (4.35...4.55) Rack travel in mm : 9.00...12.00

: 4.40...4.50

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed rpm Minimum rack trave: 10.30

Speed rpm : 350 Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 Speed rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del.quantity cm3/: 163.0...171.0 1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 270.0...320.0 Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.50...4.70

Remarks:

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

E19

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

Scania test specifications taken over on Oct. 17, 1988

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Start of delivery - engine: 13, before TDC

Firing sequence of engine:

1-5-3-6-2-4.

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 0-60-120-180-240-300 Test sheet : SCA 9,0 L 3 Phasing : 02.06.89 Edition Tolerance + - ... : 0.50 (0.75): 7.2.89 Replaces : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 0 402 646 861 BASIC SETTING Injection pump Pump designation : PE6P120A320RS7138 1st speed rpm : 700 EP type number : 0 412 626 822 Rack travel in mm : 12.20...12.30 Governor Governor design. : RQV300....925PA712-4 : 0 421 813 701 Governer no. Del.quantity cm3/: 16.5...16.7 100 s: (16.2...17.0) Customer-spec. information Customer : SAAB-SCANIA cm3 : 0.6Spread : DS9 52,53,54,55 Engine 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 4.6...5.0 Del.quantity cm3/ : 2.0...2.4 Test oil inlet temp. , C : 38...42 100 s: (-) Overflow valve cm3 : 0.3Spread : 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.40...1.80 Opening travel mm pressure, bar : 207...210 rpm : 350 2nd speed : 1.90...2.50 travel mm 3rd speed rpm : 650 Orifice plate : 4.70...5.30 : 0,8 diameter mm travel mm rpm : 970 4th speed : 8.40...8.60 travel mm Test Lines : 1 680 750 015 5th speed rpm: 1045 : 9.30...9.70 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 x Length mm Control-lever position Degree: -1 Speed rpm : 970 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version rpm : 700 Test pressure, bar: 25...27 Speed Del.quantity : 103.0...170.0) : 4.40...4.50 Prestroke mm : (4.35...4.55) Rack travel in mm : 9.00...12.00 : 6.00 : (9.00) Spread cm3 1000

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.20 Speed rpm: 965...975 2nd rack travel in: 4.00

rpm : 1030...1060 Speed

4th rack travel in: 1150 rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

Speed : 100 rpm Minimum rack trave: 10.00 rpm : 300

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 330...390

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 163.0...171.0 1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 965...975 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...320.0 Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

F21

3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-T-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 13, before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Firing order : 1-8-4-3-6-5-7-2 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : FIA 17,2 e : 30.05.89 : 29.3.89 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 648 854 Injection pump Pump designation : PE8P130A920/5LS7822 EP type number : 0 412 638 802 Governor Governor design. : RQV300...950PA905 Governer no. : 0 421 813 723 Customer-spec. information Customer : IVECO-FIAT Engine : 8280.42.001 Spread TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 40...45 Overflow valve : 1 417 413 025 Spread Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Speed Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.10...5.20

Rack travel in mm : 9.00...12.00

: (5.05...5.25)

Phasing : 0-45-90-135-180-225-270-315 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 550 Rack travel in mm : 11.70...11.80 Del.guantity cm3/: 23.7...24.0 100 s: (23.3...24.3) cm3 : 0.8100 s: (1.2) 2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.0...2.6 100 s: (1.6...3.0) cm3 : 0.6100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.20...1.40 2nd speed rpm : 425 travel mm : 3.20...3.80 3rd speed rpm : 650 travel mm : 4.90...5.50 4th speed rpm : 950 : 7.90...8.10 rpm : 1200 travel mm 5th speed travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 975 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm: 550 Aneroid pressure h: 900 Del.quantity : 237.0...240.0 1000 : (233.5...243.5)

Prestroke mm

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control Lever

position degrees: 57...65

Testina:

1st rack travel in: 10.70 Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1075...1105 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 Speed rpm: 300 Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 320...425 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 11.70...11.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 440

Rack travel in m: 11.10...11.20 3rd pressure hPa : 400

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 950 Del.quantity cm3/: 220.0...227.0 1000 s: (216.5...230.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 173.0...176.0 1000 s: (169.5...179.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 990...1000 Speed

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 210.0...240.0 1000 s: (206.0...244.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 14,7 g 2 : 30.03.87 Test sheet Edition

Combination no. : 0 402 678 804

Injection pump

Governer no.

Pump designation : PE8P120A320LS7801-1

: 1.9.87

: ISO-4113

EP type number : 0 412 628 818

Governor

Replaces

Test oil

Governor design. : RSV350...1050P0A825-

: 0 421 833 261

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442A

1st version kW : 255.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (4.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del.guantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Speed Del.quantity 1000 : 241.0...243.0 : (238.0...246.0)

: 5.00 Spread cm3

1000

RATED SPEED

1st version

Control Lever position degrees: 74...82 Testing: 1st rack travel in: 14.70 Speed rpm: 750...755 2nd rack travel in: 4.00 Speed rpm : 1135...1150 4th rack travel in: 1400 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 60...68 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.3 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed rpm: 350
Rack travel in mm: 5.20...5.40
Rack travel in mm: 2.00
Speed rpm: 350...410 SET IDLE AUXILIARY SPRING Speed rpm : 2.00 TORQUE CONTROL 2nd speed rpm : 900 Rack travel in m: 13.20...13.40 3rd speed rpm : 1000 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 246.0...252.0 1000 s: (243.0...255.0) Spread cm3 : 8.00 1000 s: (12.0) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 250.0...270.0 1000 s: (246.0...274.0) Remarks: **APPLICATION**

E25

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 o 1 Edition : 08.05.89

Replaces

Test oil : ISO-4113

: 0 402 745 808 Combination no.

Injection pump

Pump designation : PES5P120A720LS7163

: 0 412 725 807 EP type number

Governor

Governor design: RQ300/1050PA774-4

: 0 421 801 453 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 LA

1st version kW : 221.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. .. C . : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00 : 1-3-5-4-2 Firing order

Phasing : 0-72-144-216-288

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rbm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

Del.quantity : 235.0...237.0 1000 : (232.0...240.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed : 600 rpm

Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.00 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 5.7 Testina: Speed rpm : 200 Minimum rack trave: 7.60 Speed rpm : 300 Rack travel in mm : 5.60...5.90 Rack travel in mm : 2.00 : 370...410 Speed rpm TORQUE CONTROL Dimension a mm : 0.65 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.00...13.20 d speed rpm : 750 2nd speed Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 800 Pressure Rack travel mm : 13.60...13.80 Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.00...11.20 2nd pressure hPa : 450 Rack travel in m: 134.00...13.20 3rd pressure hPa : 1000 Rack travel in m: 13.70...13.80 * 4th pressure hPa : 1125 Rack travel in m: 14.10...14.30 5th pressure hPa : -Rack travel in m: 10.00...10.40 START CUT-OUT 1/min : 220 (240) Speed

1st version Aneroid pressure h: 1400 : 1050 Speed rpm Del.quantity cm3/: 228.0...231.0 1000 s: (225.0...234.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 750 Del.quantity cm3/ : 250.0...254.0 1000 s: (247.0...257.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/ : 146.0...148.0

1000 s: (143.0...151.0)

Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 10.50 Note remarks Firing order : 1-5-3-6-2-4 : MAC 12,0 a4 : 02.05.89 Test sheet Edition Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 : 0 402 746 853 Combination no. Tolerance + - . . . : 0.50 (0.75)Injection pump Pump designation : PES6P120A720RS7157 Time to cyl. no. : 1 : 0 412 726 814 EP type number Governor BASIC SETTING Governor design. : RQV325...900PA909-1K : 0 421 815 211 Governer no. rpm: 900 1st speed Rack travel in mm : 13.80...13.90 Customer-spec. information Customer : MACK TRUCKS Del.quantity cm3/: 23.3...23.5 : E7-350 Engine 100 s: (23.0...23.8) 1st version kW : 261.0 : 1800 Rated speed Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) 2nd speed rpm : 325.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 4.0...4.6 Test oil inlet temp. ., C : 38...42 Overflow valve : 2 417 413 011 Spread cm3 : 0.8Overflow quantity min. 1/h: 160...170 with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 325 1st speed Opening travel mm : 207...210 rpm : 450 pressure, bar 2nd speed travel mm rpm : 650 Orifice plate 3rd speed diameter mm : 0,6 travel mm rpm : 900 4th speed travel mm Test lines : 1 680 750 008 5th speed travel mm Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm 1st version rpm : 900 (A) Injection pump setting values Speed Insp. values in parentheses Aneroid pressure h: 1200 Set equal delivery quant.

100 s: (3.8...4.8) 100 s: (1.2) (B) Setting of injection pump : 1.20...1.40 : 2.80...3.20 : 5.60...5.80 : 8.30...8.50 rpm : 1100 : 10.30...10.80 FULL LOAD DELIV. AT FULL LOAD STOP Del.quantity : 233.5...235.5 1000 : (230.5...238.5) Spread cm3 : 5.00 1000 : (9.00)

per values ____

Test pressure, bar: 17...19

BEGINNING OF DELIVERY

RATED SPEED

1st version Control lever

position degrees: 58...66

Testina:

1st rack travel in: 12.80 Speed rpm: 940...950 2nd rack travel in: 4.00

rpm : 1080...1110

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

: 275 Speed I.DW Minimum rack trave: 6.30 rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.80...13.90

2nd speed rpm : 625

Rack travel in m: 13.50...13.70 3rd speed rpm : 500

Rack travel in m: 11.50...11.90

Aneroid/Altitude Compensator Test

1st version Setting

: 900 Speed rpm hPa : 1200 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -Rack travel in m: 7.80...8.20

2nd pressure hPa : 325 Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min : 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625
Del.quantity cm3/ : 266.0...272.0
1000 s: (263.0...275.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 940...950 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.0...3.2 mm.

Bow dimension:

Sliding-sleeve position = 37.0 mm

: 3.15...3.25 : (3.10...3.30) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : CUM 8,3 D 3 Test sheet Edition : 07.07.89 : 29.04.88 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 403 436 104 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6MW100/120RS1143 EP type number : 0 413 406 137 BASIC SETTING Governor Governor design. : RQV350...1200MW82-1 rpm: 1200 1st speed : 0 420 083 153 Governer no. Rack travel in mm : 12.00...12.10 Customer-spec. information Del.quantity cm3/: 13.6...13.8 Customer : CUMMINS/US 100 s: (13.4...14.0) : 6 CTA-830 Engine : 179.0 cm3 : 0.3Spread 1st version kW : 2400 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm: 7.1...7.2 Test oil Del.quantity cm3/: 1.2...1.6 inlet temp. , C : 38...42 100 s: (1.0...1.8) cm3 : 0.3 Overflow valve Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar : 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 1250 Opening travel mm : 7.60...7.80 : 207...210 : 1350 pressure, bar 2nd speed rpm : 8.60...9.00 travel mm : 350 Orifice plate 3rd speed rpm : 1.20...1.60 diameter mm : 0,6 travel mm : 800 4th speed rpm : 4.90...5.50 travel mm : 1 680 750 008 Test Lines FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version rpm : 1200 : 6.00X2.00X600 x Length mm Speed Aneroid pressure h: 700 (A) Injection pump setting values Del.quantity Insp. values in parentheses Set equal delivery quant.

: 136.0...138.0 1000 : (134.0...140.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

F02

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Control Lever position degrees: 42...50 Testina: 1st rack travel in: 11.00 Speed rpm : 1250...1260 2nd rack travel in: 4.00 rpm : 1375...1405 Speed 4th rack travel in: 1455 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 11...19 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.1 Testina: Speed : 100 rpm Minimum rack trave: 9.00 Speed rpm : 350 Rack travel in mm : 7.10...7.20 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version t speed rpm : 1200 Rack travel in m: 12.00...12.10 1st speed : 750 2nd speed rpm Rack travel in m: 12.50...12.60 rpm : 1000 3rd speed Rack travel in m: 12.00...12.10 4th speed rpm : 900 Rack travel in m: 12.10...12.30 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : Pressure Rack travel mm : 11.00...11.10 Measurement 1/min : 500 Speed 1st pressure hPa : 390 Rack travel in m: 11.40...11.50 2nd pressure hPa : 480 Rack travel in m: 11.90...12.20 3rd pressure hPa : 700 Rack travel in m: 12.50...12.60

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.guantity cm3/: 138.5...140.5 1000 s: (135.5...143.5) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 108.0...110.0 1000 s: (106.0...112.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1250...1260 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 7.10...7.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (10.0...18.0) : 3.50 Spread cm3 1000 s: (5.50) Remarks: Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

1/min: 270 (280)

Speed

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 F 1 Test sheet : 10.02.89 Edition Replaces : ISO-4113 Test oil : 0 403 436 105 Combination no. Injection pump Pump designation : PES6MW100/120RS1169 EP type number : 0 413 406 153 Governor Governor design. : RQV350...1200MW78-1 Governer no. : 0 420 083 156 Customer-spec. information Customer : CDC Engine : 6CTA830 : 197.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

```
: 0-60-120-180-240-300
Phasina
Tolerance + - ... : 0.50 (0.75)
BASIC SETTING
               rpm : 1200
1st speed
Rack travel in mm : 11.90...12.00
Del.quantity cm3/: 14.1...14.3
              100 s: (13.9...14.5)
Spread
              cm3 : 0.3
              100 s: (0.6)
             rpm : 350.0
2nd speed
Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.6...2.0
              100 s: (1.4...2.2)
              cm3 : 0.3
Spread
              100 s: (0.5)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed rpm : 1350
                   : 8.60...9.00
  travel mm
             rpm : 1250
2nd speed
                  : 7.60...7.80
  travel mm
             rpm : 800
3rd speed
                  : 4.90...5.50
  travel mm
             rpm : 350 : 1.20...1.60
4th speed
 travel mm
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
             rpm : 1200
Aneroid pressure h: 600
            1000 : (139.0...145.0)

cm3 : 3.50

1000 : (6.00)
Del.quantity
Spread
RATED SPEED
1st version
Control lever
position degrees: 42...50
Testing:
1st rack travel in: 10.90
```

Firing order : 1-5-3-6-2-4

F04

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

rpm : 1240...1250 Speed 2nd rack travel in: 4.00 4th rack travel in: 1500 Speed rom LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.7 Testina: : 100 Speed rpm Minimum rack trave: 7.50 : 350 Speed rpm Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 370...500 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 300 mm : 11.00...11.10 Speed rpm Pressure Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.70...10.80 2nd pressure hPa : 375 Rack travel in m: 11.50...11.80 3rd pressure hPa : 600 Rack travel in m: 11.90...12.00 START CUT-OUT 1/min: 270 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 : 750 Speed rpm Del.quantity cm3/: 137.5...141.5 1000 s: (135.0...143.0) cm3 : 5.00 1000 s: (7.0) Spread Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 113.5...115.5 1000 s: (111.5...117.5)

Spread cm3 : 3.50 1000 s: (6.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 218.0...228.0

1000 s: (215.0...231.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.60...5.80
Del.quantity cm3/: 16.0...20.0
1000 s: (14.0...22.0)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

F05

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 D12 : 0-60-120-180-240-300 Phasing Test sheet Edition : 30.05.89 Tolerance + - ... : 0.50 (0.75)Replaces : 07.04.89 Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 403 436 111 BASIC SETTING Injection pump Pump designation : PES6MW100/120RS1143 1st speed rpm: 1200 EP type number : 0 413 406 137 Rack travel in mm : 12.10...12.20 Governor Governor design. : RQV350...1200MW82-6 Governer no. : 0 420 083 184 Del.quantity cm3/: 13.8...14.0 Customer-spec. information 100 s: (13.6...14.2) Customer : CUMMINS/US cm3 : 0.3Spread Engine : 6 CTA-830 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/ : 1.2...1.6 100 s: (1.0...1.8) Test oil inlet temp. ., C : 38...42 Overflow valve Spread cm3 : 0.3: 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1250 travel mm : 7.60...7.80 Opening rpm : 1350 pressure, bar : 207...210 2nd speed : 8.60...9.00 travel mm rpm : 350 3rd speed Orifice plate : 1.20...1.60 rpm : 800 : 0,6 diameter mm travel mm 4th speed : 4.90...5.50 travel mm Test lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 1200 Aneroid pressure h: 700 : 6.00x2.00x600 x Length mm Del.quantity : 138.0...140.0 1000 : (136.0...142.0) Spread cm3 : 3.50 1000 : (6.00) (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY RATED SPEED Test pressure, bar: 30...32 1st version Prestroke mm : 3.15...3.25 : (3.10...3.30) Rack travel in mm : 9.00...12.00 Control lever

position degrees: 42...50

F06

Testina: 1st rack travel in: 11.10 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1370...1400 4th rack travel in: 1455 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 11...19 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 7.2 Testing: Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm : 350 Rack travel in mm : 7.10...7.30 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 12.10...12.20 rpm : 750 2nd speed Rack travel in m: 12.50...12.60

3rd speed rpm : 1000

Rack travel in m: 12.10...12.20

4th speed rpm : 900 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 10.70...10.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 390 Rack travel in m: 11.00...11.10 2nd pressure hPa : 500 Rack travel in m: 11.60...11.90 3rd pressure hPa : 700 Rack travel in m: 12.50...12.60 START CUT-OUT Speed 1/min: 270 (280) FUEL DELIVERY CHARACTERISTICS

F07

STARTING FUEL DELIVERY

full load rack tr: 11.10

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (202.0...228.0)

rpm : 1240...1250

LOW IDLE

Speed

1000 s: (5.50)

Remarks:

: C.D.C. #3916000

Firing order : 1- 3- 4- 2 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 0-90-180-270 Test sheet : VOL 4,5 K Phasing : 30.05.89 : 19.12.88 Edition Tolerance + - ... : 0.50 (0.75)Replaces Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 444 108 rpm: 700 1st speed Injection pump Rack travel in mm : 12.50...12.60 Pump designation : PES4MW100/320RS1116 : 0 413 404 102 EP type number Del.quantity cm3/: 11.6...11.8 Governor Governor design. : RQV300...1100MW51 Governer no. : 0 420 083 072 100 s: (11.4...12.0) Customer-spec. information Spread cm3 : 0.3: VOLVO-BM Customer 100 s: (0.6) Engine : TD45-EM 2nd speed rpm : 300.0 Rack travel in mm : 5.8...5.9 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9) 1st version kW : 85.0 : 2200 Rated speed TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. , C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL rpm : 1220 1st speed : 9.20...9.60 Inlet press., bar: 1.50 travel mm rpm : 1150 2nd speed Test nozzle holder travel mm : 8.40...8.60 rpm : 420 : 0 681 343 009 assembly 3rd speed : 1.70...2.30 travel mm rpm : 300 4th speed Openina : 172...175 : 1.00...1.40 pressure, bar travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 014 Control-lever position Degree: -1 Outside diameter Speed rpm : 1100 Rack travel in mm : 15.20...17.80 x Wall thickness : 6.00X2.00X60D x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version Speed rpm : 700 Aneroid pressure h: 750 per values Del.quantity : 710.0...120.0) BEGINNING OF DELIVERY : 3.50 Test pressure, bar: 30...32 Spread cm3 1000 : (6.00)

RATED SPEED

F08

Prestroke mm

: 3.20...3.30

Rack travel in mm : 9.00...12.00

: (3.15...3.35)

1st version Control Lever position degrees: 48...56 Testing: 1st rack travel in: 11.50 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 5.8 Testina: Speed : 100 rpm Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 5.80...5.90 CONSTANT REGULATION rpm : 330...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 700 Speed rom hPa : 265 Pressure : 10.60...10.70 Rack travel mm Measurement 1/min: 700 Speed 1st pressure hPa : 750 Rack travel in m: 12.5...12.60 2nd pressure hPa : -Rack travel in m: 10.50...10.60 3rd pressure hPa : 520 Rack travel in m: 12.40...12.60 START CUT-OUT Speed 1/min: 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 rpm : 1000 Speed Del.quantity cm3/: 117.0...121.0 1000 s: (114.5...123.5)

cm3 : 5.50Spread 1000 s: (6.0) Aneroid pressure h: -: 700 Speed rpm Del.quantity cm3/: 79.0...81.0 1000 s: (76.5...83.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

LOW IDLE

F09

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 8,8 F Edition : 09.06.89 Replaces : 04.86 : ISO-4113 Test oil : 0 403 446 129 Combination no. Injection pump Pump designation : PES6MW100/320RS1016 : 0 413 406 010 EP type number Governor Governor design. : RQV300...1400MW25-2 : 0 420 083 048 Governer no. Customer-spec. information : RVI Customer : MIDRO6.02-12 Engine 1st version kW : 125.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . : 38...42 Overflow valve : 2 417 413 033 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening | pressure, bar : 173...176 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - . . . : 0.50 (0.75)BASIC SETTING 1st speed rpm : 1400 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 9.1...9.3 100 s: (8.9...9.5) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1400 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 Aneroid pressure h: 700 Del.quantity : 91.0...95.0)

1000 : (89.0...95.0)

1000 : (3.50) 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 10.10 Speed rpm : 1450...1460 2nd rack travel in: 4.00 Speed rpm : 1565...1595 4th rack travel in: 1700 Speed rpm : 0.00...1.00

LOW IDLE 1

F10

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

Control Lever position degrees: 9...17 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 4.7 : 300 Speed rpm Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 : 490...550 Speed man Speed : 200 rpm Maximum rack trave: 7.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 500 : 11.10...11.20 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.40...9.50 2nd pressure hPa : 120 Rack travel in m: 9.90...10.00
3rd pressure hPa : 155
Rack travel in m: 10.70...10.80 START CUT-OUT 1/min : 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 900 Speed Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500

Del.quantity cm3/: 52.0...54.0 1000 s: (50.0...56.0) **BREAKAWAY** 1st version 1mm rack travel less than

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 94.0...104.0 1000 s: (91.0...107.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Start-of-delivery mark is 8, after start of delivery with control-rod travel = 10.5 mm.

Speed

full load rack tr: 10.10

rpm : 1450...1460

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 K 4 : 09.06.89 Edition : 12.09.86 Replaces

: ISO-4113 Test oil

Combination no. : 0 403 446 164

Injection pump

Pump designation : PES6MW100/320RS1016

EP type number : 0 413 406 010

Governor

Governor design. : RQV300...1300MW25-4 Governor no. : D 420 083 094

Customer-spec. information Customer : RVI

: MIDRO6.02-12 Engine

1st version kW : 113.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 173...176

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 6.20...6.40 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1300 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 85.5...07... 1000 : (83.5...89.5) Spread cm3 : 3.50

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.80

rpm : 1370...1380 Speed

2nd rack travel in: 4.00

Speed rpm : 1485...1515 4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever position degrees: 8...16 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 4.5 rpm : 300 Speed Rack travel in mm : 6.20...6.40 200 Speed rom Maximum rack trave: 3.20 CONSTANT REGULATION rpm : 340...550 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 143 Pressure : 10.50...10.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 700 Rack travel in m: 10.80...10.90 2nd pressure hPa : -Rack travel in m: 9.80...9.90 3rd pressure hPa : 115 Rack travel in m: 9.80...10.10 START CUT-OUT 1/min : 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 900 Del.quantity cm3/: 82.0...86.0 1000 s: (80.0...88.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 56.0...58.0 1000 s: (54.0...60.0) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 9.80

Speed

F13

rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

1000 s: (5.50)

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

5

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 6,1 N 6 : 28.06.89 : 29.03.89 Edition Replaces : ISO-4113 Test oil Combination no. : 0 403 446 166 Injection pump Pump designation : PES6MW100/720RS1133 : 0 413 406 126 EP type number Governor Governor design. : RQ325/1325MW65 Governer no. : 0 420 082 018 Customer-spec. information Customer : KHD : BF 6L 913 BW Engine : 124.0 : 2650 1st version kW Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 0-60-120-180-240-300 Phasing BASIC SETTING rpm: 1325 1st speed Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 10.2...10.4 100 s: (10.0...10.6) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.1 Del.quantity cm3/ : 1.1...1.5 100 s: (0.9...1.7) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1460 1st speed : 8.60...9.20 travel mm : 1380 2nd speed rpm : 6.50...6.70 travel mm : 425 3rd speed rpm : 4.00...4.40 travel mm : 300 : 2.00...2.40 4th speed rpm travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 700 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1325 Speed Aneroid pressure h: 800 Del.quantity : 102.0...106.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

Firing order : 1-5-3-6-2-4

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)
Rack travel in mm : 9.00...12.00

1st version Control lever position degrees: 26...34 Setting point: Speed rpm Rack travel in mm : 20.0 Testing: 1st rack travel in: 10.10 Speed rpm : 1370...1385 2nd rack travel in: 4.00 Speed rpm : 1440...1470 4th rack travel in: 1550 rpm : 0.10...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.0 Testing: Speed rpm : 100 Minimum rack trave: 8.60 rpm : 300 Rack travel in mm : 7.00...7.10 CONSTANT REGULATION rpm : 340...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 450 Pressure Rack travel mm : 10.50...10.60 Measurement 1/min: 500 Speed 1st pressure hPa : 800 Rack travel in m: 11.10...10.20 2nd pressure hPa : -Rack travel in m: 9.40...9.50 3rd pressure hPa : 350 Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

cm3 : 3.50 1000 s: (7.0) Spread Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 56.0...58.0 1000 s: (54.0...60.0) RACK STOP ADJUSTMENT Speed rpm : 100 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1370...1385 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 120.0...140.0 1000 s: (117.0...143.0) LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.00...7.10 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

1st version

Aneroid pressure h: 800

Speed rpm: 850 Del.quantity cm3/: 94.0...98.0

1000 s: (92.0...100.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 6,1 P 3 Edition : 28.06.89 : 06.11.87 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 167 Injection pump Pump designation : PES6MW100/320RS1136 EP type number : 0 413 406 128 Governor Governor design. : RQV350...1100MW54-2 Governer no. : 0 420 083 096 Customer-spec. information Customer : VOLVO Engine : TD 61 : 111.0 : 2200 1st version kW Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)BASIC SETTING rpm : 700 1st speed Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 11.0...11.2 100 s: (10.8...11.4) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 6.3...6.4 Del.quantity cm3/ : 1.6...2.0 100 s: (1.4...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1210 travel mm : 9.50...9.90 rpm : 1150 2nd speed : 8.60...8.80 travel mm rpm : 550 3rd speed : 2.30...2.90 travel mm 4th speed : 300 rom : 0.70...1.10 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1150 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000 Del.quantity : 7:0.0...114.0)

1000 : (108.0...114.0)

1000 : 3.50 1000 : (6.00) RATED SPEED

Firing order : 1-5-3-6-2-4

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

1st version Control lever position degrees: 44...52 Testina: 1st rack travel in: 11.40 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1350 rpm : 0.10...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring : 350 Speed rpm Rack travel in mm: 6.3 Testina: : 100 Speed rpm Minimum rack trave: 7.80 : 350 Speed rom Rack travel in mm : 6.30...6.40 CONSTANT REGULATION Speed rpm : 370...450 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 440 Pressure : 12.10...12.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.90...11.00 2nd pressure hPa : 230 Rack travel in m: 11.10...11.40 3rd pressure hPa : 1000 Rack travel in m: 12.40...12.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1000 Del.quantity cm3/: 111.0...115.0 1000 s: (109.0...117.0) cm3 : 3.50 Spread 1000 s: (7.0) Aneroid pressure h: -: 700 Speed rpm

Del.quantity cm3/: 82.0...84.0 1000 s: (80.0...86.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (137.0...163.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 16.0...20.0 1000 s: (14.0...22.0) Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

F17

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 D 34 : 16.06.89 Test sheet Edition : 05.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 184 Injection pump Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138 Governor Governor design. : RQV300...1300MW48-3 Governer no. : 0 420 083 121 Customer-spec. information Customer Engine : 0M366A 1st version kW : 125.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 10.90...11.00 Del.quantity cm3/ : 7.2...7.4 100 s: (7.0...7.6) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 7.8...7.9 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1340 : 8.50...8.70 travel mm : 1450 2nd speed rpm : 9.30...9.70 travel mm : 500 : 2.70...3.30 3rd speed rpm travel mm : 300 4th speed rpm : 1.20...1.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Del.quantity : 72.0...76.0)
Shread cm3 : 3.50 1000 RATED SPEED

1st version

BEGINNING OF DELIVERY Test pressure, bar: 30...32

per values

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

F18

Control lever position degrees: 50...58 Testina: 1st rack travel in: 9.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 7.8 Testina: Speed : 100 rpm Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.80...7.90 CONSTANT REGULATION rpm : 330...500Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 rpm : 800 2nd speed Rack travel in m: 11.60...11.80 rpm : 585 3rd speed Rack travel in m: 11.80...12.00 START CUT-OUT 1/min : 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rom Del.quantity cm3/: 71.0...73.0 1000 s: (69.0...75.0) cm3 : 5.00Spread 1000 s: (7.0) Speed rpm : 585 Del.quantity cm3/ : 65.0...68.0 1000 s: (62.5...70.5) cm3 : 5.00Spread 1000 s: (7.00)

BREAKAWAY

1st version

F19

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 300

Rack travel in mm : 7.80...7.90 Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 6,1 N 9 Edition : 28.06.89 : 29.03.89 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 186 Injection pump Pump designation : PES6MW100/720RS1133 EP type number : 0 413 406 126 Governor Governor design. : RQV325...1325MW79 : 0 420 083 123 Governer no. Customer-spec. information Customer : KHD : BF 6L 913 Engine 1st version kW : 124.0 Rated speed : 2650 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

```
Phasing
                   : 0-60-120-180-240-300
Tolerance + - ... : 0.50 (0.75)
BASIC SETTING
1st speed
             rpm : 1325
Rack travel in mm : 10.50...10.60
Del.quantity cm3/: 10.1...10.3
             100 s: (9.9...10.5)
Spread
             cm3 : 0.3
             100 s: (0.6)
             rpm : 325.0
2nd speed
Rack travel in mm : 6.8...6.9
Del.quantity cm3/: 1.1...1.5
100 s: (0.9...1.7)
             cm3 : 0.3
Spread
             100 s: (0.5)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed rpm : 1375
  travel mm
                   : 8.70...8.90
2nd speed rpm : 1430
                   : 9.50...9.90
  travel mm
             rpm : 325
: 1.50...1.90
3rd speed
  travel mm
4th speed rpm : 600
 travel mm : 2.70...3.30
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -1
             rpm : 1400
Speed
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 1325
Speed
Aneroid pressure h: 900
Del.quantity : 101.0...103.0
1000 : (99.0...105.0)
Spread cm3 : 3.50
1000 : (6.00)
RATED SPEED
```

Firing order : 1-5-3-6-2-4

F20

Prestroke mm

1st version Control lever position degrees: 50...58 Testing: 1st rack travel in: 9.50 Speed rpm : 1370...1380 2nd rack travel in: 4.00 Speed rpm : 1445...1475 4th rack travel in: 1550 rpm : 0.10...1.00 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.8 Testina: rpm : 100 Speed Minimum rack trave: 8.60 rpm : 325 Rack travel in mm : 6.80...6.90 CONSTANT REGULATION rpm : 350...650 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 500 Pressure hPa : 450 Rack travel mm : 9.90...10.00 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 8.90...9.00 2nd pressure hPa : 350 Rack travel in m: 9.30...9.60 3rd pressure hPa : 900 Rack travel in m: 10.50...10.60 START CUT-OUT 1/min : 245 (255) Speed FUEL DELIVERY CHARACTERISTICS

Spread cm3 : 3.501000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 57.0...59.0 1000 s: (55.0...61.0) RACK STOP ADJUSTMENT Speed rpm : 100 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1370...1380 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.80...6.90 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) Spread cm3 : 3.50 1000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

1st version

Aneroid pressure h: 900 Speed rpm : 850

Del.quantity cm3/: 93.0...97.0 1000 s: (91.0...99.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 8,8 Q Test sheet : 23.06.89 Edition : 07.02.89 Replaces : ISO-4113 Test oil

: 0 403 446 190 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1154

: 0 413 406 144 EP type number

Governor

Governor design. : RQV275...1250MW80

Governer no. : 0 420 083 128

Customer-spec. information Customer : RVT

Engine : MIDR 060226

: 128.7 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)
Rack travel in mm : 16.50...19.50

F22

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 275.02nd speed

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 2.3...2.7

100 s: (2.0...2.9) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1475 1st speed

: 9.20...9.60 rpm : 1300 travel mm 2nd speed

travel mm : 7.80...8.00

rpm : 500 3rd speed

: 3.00...3.60 travel mm

: 275 4th speed rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1360 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del.quantity : 99.5...103.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Speed rpm : 500 Del. quantity cm3/: 49.0...51.0 Control lever position degrees: 48...56 1000 s: (47.0...53.0) Testing: 1st rack travel in: 12.00 Speed rpm : 1330...1350 BREAKAWAY 2nd rack travel in: 4.00 1st version rpm : 1490...1530 Speed 1mm rack travel less than 4th rack travel in: 1600 rpm : 0.00...1.00 Speed full load rack tr: 12.00 rpm : 1330...1350 Speed LOW IDLE 1 Control lever STARTING FUEL DELIVERY position degrees: 12...20 Setting point w/out bumper spring rpm : 275 Speed rpm : 100 Rack travel in mm: 6.8 Del.quantity cm3/: 88.0...102.0 1000 s: (85.0...105.0) Testina: Rack travel in mm : 19.50...21.00 Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 275 Rack travel in mm : 6.10...6.30 LOW IDLE rpm : 275 Speed Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 23.0...27.0 Aneroid/Altitude 1000 s: (20.5...29.5) Compensator Test : 3.50 Spread cm3 1000 s: (5.00) 1st version Setting Remarks: Speed : 500 rom hPa : 800 Pressure Rack travel mm : 12.90...13.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10
2nd pressure hPa : 200
Rack travel in m: 11.50...11.80
3rd pressure hPa : 360 Rack travel in m: 12.60...12.70 START CUT-OUT Speed 1/min: 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800 rpm : 750 Speed Del.quantity cm3/: 91.5...94.5 1000 s: (89.0...97.0) cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 2 Edition : 31.03.89

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 220

Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

Governor

Governor design. : RQV300...1400MW80-3

: 0 420 083 183 Governer no.

Customer-spec. information Customer : RVI

: MIDR 06.02.12D Engine

: 134.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 173...176

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

F24

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 6.70...6.90 Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed : 1450 rpm travel mm

: 8.50...8.70 3rd speed : 500 rpm

travel mm 2.80...3.40

4th speed rpm

: 300 : 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Aneroid pressure h: 750

: 92.0...94.0 Del.quantity

1000 : (90.0...96.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 11.60

: 1470...1480 Speed rpm 2nd rack travel in: 4.00 Speed rpm : 1600...1630 4th rack travel in: 1700 Speed rpm : 1.00...0.00 LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 5.8 Testing: Speed rpm : 200 Minimum rack trave: 8.20 : 300 rpm Rack travel in mm : 6.70...6.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure Rack travel mm : 11.90...12.00 Measurement Speed 1/min: 500 1st pressure hPa : 80 Rack travel in m: 10.40...10.50 2nd pressure hPa : 200 Rack travel in m: 11.80...12.10 3rd pressure hPa : 750 Rack travel in m: 12.60...12.70 START CUT-OUT

1/min: 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 750 rpm : 900 Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0) cm3 : 5.00Spread

1000 s: (7.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity_cm3/ : 42.0...44.0

1000 s: (40.0...46.0)

BREAKAWAY

F25

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1470...1480

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 95.0...115.0 1000 s: (92.0...118.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm: 300 Rack travel in mm: 6.70...6.90 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 7,2 Q : 23.06.89 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 456 105 Injection pump Pump designation : PES6MW100/321RS1186 EP type number : 0 413 406 168 Governor Governor design. : RQ250/1200MW84-2 Governer no. : 0 420 082 040 Customer-spec. information Customer : MAN : D 0826 LUH Engine 1st version kW : 157.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance $+ - \frac{1}{2}$: 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 12.00...12.10 Del.quantity cm3/: 12.6...12.8 100 s: (12.4...13.0) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 250.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1280 : 9.50...9.90 travel mm 2nd speed rpm : 1250 travel mm : 7.50...7.70 3rd speed rpm : 350 travel mm : 5.20...5.80 4th speed rpm : 250 : 2.30...2.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 14.70...16.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Del.quantity : 126.0...128.0 1000 : (124.0...130.0) Spread cm3 : 3.50 1000 : (6.00)

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm : (3.55...3.75) Rack travel in mm : 15.00...0.00

RATED SPEED ±	3rd pressure hPa : 1000 Rack travel in m: 12.5012.60
1st version Control lever position degrees: 3442	START CUT-OUT
Setting point: Speed rpm : 600 Rack travel in mm : 15.5	Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS
Testing: 1st rack travel in: 10.50 Speed rpm : 12451260 2nd rack travel in: 4.00 Speed rpm : 12701300 4th rack travel in: 1450 Speed rpm : 0.001.00	1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 124.0127.0 1000 s: (121.5129.5) Spread cm3 : 5.00 1000 s: (7.0)
LOW IDLE 1 Control lever position degrees: 816 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3	Aneroid pressure h: 1000 Speed rpm: 800 Del.quantity cm3/: 124.0127.0
Testing: Speed rpm : 100 Minimum rack trave: 7.30 Speed rpm : 250 Rack travel in mm : 5.205.40	Aneroid pressure h: - Speed rpm : 500 Del.quantity cm3/ : 74.076.0 1000 s: (72.078.0)
TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.0012.10 2nd speed rpm : 600 Rack travel in m: 12.5012.60 3rd speed rpm : 800 Rack travel in m: 12.5012.60 4th speed rpm : 1200 Rack travel in m: 11.5011.60 Aneroid/Altitude Compensator Test	1st version 1mm rack travel less than full load rack tr: 10.50 Speed rpm : 12451260 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0140.0 1000 s: (127.0143.0)
1st version Setting Speed rpm : 500 Pressure hPa : 200 Rack travel mm : 9.609.70	LOW IDLE Speed rpm : 250 Rack travel in mm : 5.205.40 Del.quantity cm3/ : 19.023.0 1000 s: (16.525.5) Spread cm3 : 3.50
Measurement Speed 1/min: 500 1st pressure hPa: - Rack travel in m: 9.309.40 2nd pressure hPa: 400	1000 s: (5.50) Remarks: : Start-of-delivery mark is at start of
Rack travel in m: 10.9011.20	delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 E 1 : 03.07.89 Test sheet Edition Replaces : 07.02.89 : ISO-4113 Test oil Combination no. : 0 403 466 107DA Injection pump Pump designation : PES6MW100/120RS1148 EP type number : 0 413 406 143 Governor : RSV400...900MW7A319 Governor design. : 0 420 085 082 Governer no. : 3909342 Cust. part no. Customer-spec. information : CUMMINS/US Customer Engine : 6 CTA 1st version kW : 171.0 : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Opening : 207...210 pressure, bar Orifice plate : 0,6 diameter mm Test lines : 1 680 750 014

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

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Test pressure, bar:	3032
Prestroke mm :	3.603.70 (3.553.75) 9.0012.00 1-5-3-6-2-4
Rack travel in mm : Firing order :	9.0012.00 1-5-3-6-2-4
Phasing :	0-60-120-180-240-300
Tolerance +, .:	0.50 (0.75)
Time to cyl. no. :	1
BASIC SETTING	
1st speed rpm:	750
Rack travel in mm :	13.0013.10
Del.quantity cm3/:	17.918.1
100 s:	(17.718.3)
Spread cm3:	0.3
100 s:	(0.6)
2nd speed rpm : Rack travel in mm : Del.quantity cm3/: 100 s: Spread cm3 : 100 s:	0.3
GUIDE SLEEVE POSITIO Control-lever position Degree: Speed rpm: Rack travel in mm:	ion -3 800
FULL LOAD DELIV. AT	FULL LOAD STOP
1st version Speed rpm : Del.quantity : 1000 : Spread cm3 : 1000 :	750 179.5181.5 (177.5183.5) 3.50 (6.00)
RATED SPEED	
1st version Control lever position degrees:	4755
Setting point: Speed rpm :	800

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Outside diameter x Wall thickness

x Length mm

Rack travel in mm: 0.6 Testing: 1st rack travel in: 12.00 : 790...800 Speed rpm 2nd rack travel in: 4.00 rpm : 820...850 Speed 4th rack travel in: 1000 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 6.1 Testing: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 6.00...6.20 SET IDLE AUXILIARY SPRING Rack travel in mm : 4.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 790...800 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm: 19.00...21.00 LOW IDLE : 400 Speed rpm Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: Start-of-delivery mark 9, cam angle after start of delivery cyl. 1.

from holding magnet = 500 1/min.

Starting/full-load transition speed

GO2

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.45...3.55 Note remarks : (3.40...3.60) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : CUM 8,3 I 1 : 23.06.89 Test sheet Edition Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 403 466 118 Tolerance + - .. : 0.50 (0.75) Injection pump Pump designation : PES6MW100/120RS1178 Time to cyl. no. : 1 EP type number : 0 413 406 160 BASIC SETTING Governor : RSV425...1250MW2A332 Governor design. 1st speed rpm: 1250 : 0 420 085 111 Governer no. Rack travel in mm : 13.70...13.80 Customer-spec. information : CUMMINS Del.guantity cm3/: 14.7...14.9 Customer : 6 CT 100 s: (14.5...15.1) Engine : 204.0 : 2500 1st version kW cm3 : 0.3Spread Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 425.0 2nd speed Rack travel in mm: 5.4...5.6 Test oil Del.quantity cm3/: 1.1...1.5 inlet temp. , C : 38...42 100 s: (0.8...1.7) cm3 : 0.3Overflow valve Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 017 rpm : 800 assembly Rack travel in mm : 0.30...1.00 Opening | : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version : 0,6 rpm : 1250 diameter mm Speed Aneroid pressure h: 900 Del.quantity : 14(.U...147.0 1000 : (145.0...151.0) Spread cm3 : 3.50 (4.00) Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 RATED SPEED x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 55...63 per values ____ Setting point: BEGINNING OF DELIVERY Speed rpm : 800 Rack travel in mm: 0.6 Test pressure, bar: 30...32

603

Testing:

1st rack travel in: 12.70

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

Speed rpm : 1405...1435 4th rack travel in: 1650

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 30...38

Setting point w/out bumper spring

rpm : 425 Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

: 425 Speed rom Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 540...600

SET IDLE AUXILIARY SPRING

Rack travel in mm: 4.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : -Pressure

: 10.60...10.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 305 Rack travel in m: 11.60...11.70

2nd pressure hPa : 465

Rack travel in m: 12.90...13.20

3rd pressure hPa : 900

Rack travel in m: 13.70...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Anenoid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 92.5...94.5

1000 s: (90.5...96.5)

cm3 : 5.00 Spread

1000 s: (7.00)

BREAKAWAY

G04

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (147.0...173.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: C.D.C. #3913733

Start-of-delivery mark at 14, angular displacement of the cam after start of delivery of cylinder 1

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 E 3 : 23.06.89 Test sheet Edition Replaces : ISO-4113 Test oil Combination no. : 0 403 466 119 Injection pump Pump designation : PES6MW100/120RS1148 EP type number : 0 413 406 143 Governor : RSV400...750MW7A319-Governor design. : 0 420 085 120 Governer no. Customer-spec. information Customer : CUMMINS Engine : 6 CTA : 180.0 1st version kW : 1500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _ C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening | pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.60...3.70 : (3.55...3.75) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm : 750 1st speed Rack travel in mm : 13.00...13.10 Del.guantity cm3/: 17.9...18.1 100 s: (17.7...18.3) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 400.0 Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 : 179.5...181.5 Del.quantity 1000 : (177.5...183.5) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 40...48 Setting point:

Speed

rom Rack travel in mm : 0.6

G05

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Testing: 1st rack travel in: 12.00 rpm : 790...800 Speed 2nd rack travel in: 4.00 Speed rpm: 820...850 4th rack travel in: 1000 Speed rpm : 0.30...1.70 LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm Rack travel in mm : 6.1 Testina: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 6.00...6.20 SET IDLE AUXILIARY SPRING Rack travel in mm : 4.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 790...800 Speed STARTING FUEL DELIVERY Speed man : 100 Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50)

Speed Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 16.0...20.0

Remarks:

: C.D.C. #3914872

Start-of-delivery mark 9, cam angle after start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 5,5 A 1 : 13.06.88 : 12.09.86 Test sheet Edition

Replaces Test oil : ISO-4113

: 0 403 476 013 Combination no.

Injection pump

Pump designation : PES6MW80/320RS1104

: 0 413 486 002 EP type number

Governor

: RSV300...1450MW0A801 Governor design.

: 0 420 085 067 Governer no.

Customer-spec. information Customer : RVI

Engine : MD060212

1st version kW : 97.8 : 2900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 028

Inlet press., bar: 2.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 173...176 pressure, bar

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.75...1.85 : (1.70...1.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 5.2...5.4

100 s: (5.0...5.6)

cm3 : 0.2Spread

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 6.60...6.70

Del.quantity cm3/ : 1.2...1.5

100 s: (1.1...1.7)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Del.quantity : 52.3...56.5)

cm3 : 2.50 1000 : (4.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.20

rpm : 1520...1530 Speed

2nd rack travel in: 4.00

rpm : 1615...1645 Speed

G07

4th rack travel in: 1700 rpm : 0.80...1.70 Speed LOW IDLE 1 Control lever position degrees: 29...37 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 4.5 Speed rpm : 300 Rack travel in mm : 6.60...6.70 Speed rpm Maximum rack trave: 8.00 TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 11.20...11.30 rpm : 1450 2nd speed Rack travel in m: 10.20...10.30 3rd speed rpm : 1100 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1450 rpm Del.quantity cm3/: 54.5...56.5 1000 s: (52.5...58.5) cm3 : 3.50 Spread 1000 s: (4.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1520...1530 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 67.0...77.0 1000 s: (64.0...80.0) Rack travel in mm: 0.00...15.00 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.60...6.70 Del.quantity cm3/: 12.5...15.5 1000 s: (11.0...17.0) Spread cm3 : 2.00 1000 s: (3.50) Remarks:

GO8

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 6,1 M Phasing : 0-60-120-180-240-300 : 28.06.89 Edition Tolerance + - ., .: 0.50 (0.75)Replaces : 29.03.89 Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 476 060 1st speed rpm: 1150 Injection pump Rack travel in mm : 12.80...12.90 Pump designation : PES6MW100/720RS1161 EP type number : 0 413 406 148 Del.quantity cm3/ : 12.3...12.5 Governor Governor design. : RSV325...1150MW5A327 : 0 420 085 084 100 s: (12.1...12.7) Governer no. cm3 : 0.3Customer-spec. information Spread Customer 100 s: (0.6) : BF6L913C Engine rpm : 325.0 2nd speed Rack travel in mm : 4.9...5.0 1st version kW : 134.0 Del.quantity cm3/: 1.0...1.4 : 2300 Rated speed 100 s: (0.7...1.6) cm3 : 0.3 TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. , C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 rpm : 800 : 1 417 413 047 Speed Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder : 0 681 343 009 assembly 1st version rpm : 1150 Speed Aneroid pressure h: 1000 Opening Del.quantity : 123.0...127.0) : 172...175 pressure, bar cm3 : 3.50 1000 : (6.00) Spread Test lines : 1 680 750 014 Outside diameter RATED SPEED x Wall thickness : 6.00x2.00x600 1st version x Length mm Control lever (A) Injection pump setting values position degrees: 52...60 Insp. values in parentheses Set equal delivery quant. Setting point: Speed per values ____ man Rack travel in mm : 0.6

Testing:

Speed

1st rack travel in: 11.80

Speed rpm : 1200...1210 2nd rack travel in: 4.00

rpm : 1245...1275

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.45...3.55 Prestroke mm

: (3.40...3.60) Rack travel in mm : 9.00...12.00

G09

4th rack travel in: 1440 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 18...25 Setting point w/out bumper spring Speed : 325 rpm Rack travel in mm: 4.7 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 325 rpm Rack travel in mm : 4.70...4.80 Rack travel in mm : 2.00 rpm : 455...515 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 12.80...12.90 rpm : 800 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 900
Rack travel in m: 13.00...13.20
4th speed rpm : 1000 Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 500 : 11.60...11.70 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 1000 Rack travel in m: 13.20...13.30 2nd pressure hPa : -Rack travel in m: 10.50...10.60 3rd pressure hPa : 650 Rack travel in m: 12.30...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 800 Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0) cm3 : 5.00 Spread

1000 s: (7.0)

Aneroid pressure h: -

G10

Speed rpm : 500 Del.quantity cm3/ : 74.0...76.0 1000 s: (72.0...78.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1200...1210 Speed STARTING FUEL DELIVERY Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) LOW IDLE Speed rpm : 325 Rack travel in mm : 4.90...5.00 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 D 73 Test sheet Phasing : 0-60-120-180-240-300 : 16.06.89 Edition Tolerance + - ... : 0.50 (0.75)Replaces Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 476 067 1st speed rpm: 1300 Injection pump Pump designation : PES6MW100/720RS1131 Rack travel in mm : 12.60...12.70 EP type number : 0 413 406 123 Del.guantity cm3/: 10.0...10.2 Governor Governor design. : RSV350...1300MWDA2 Governor no. : 0 420 085 109 100 s: (9.8...10.4) Customer-spec. information cm3 : 0.3Spread Customer : DB-NKW 100 s: (0.6) : OM 366 LA Engine 2nd speed rpm : 350.0
Rack travel in mm : 6.2...6.9
Del.quantity cm3/ : 1.0...1.2 1st version kW : 150.0 Rated speed : 2600 100 s: (0.6...1.5) cm3 : 0.3TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. , C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 047 rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 5.75 assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening | pressure, bar : 172...175 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 100.0...102.0 1000 : (98.0...104.0) Spread cm3 : 3.50 1000 : (6.00) Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control Lever per values ____ position degrees: 44...52 BEGINNING OF DELIVERY Setting point: Test pressure, bar: 30...32 Speed rpm : 800 Rack travel in mm : 0.6 : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm: 9.00...12.00 Testing:

1st rack travel in: 11.60

rpm : 1340...1345 Speed 2nd rack travel in: 4.00 rpm : 1387...1400 Speed 3rd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1600 rpm : 0.30...1.70 Speed 5th rack travel in: 1335...1350 rpm : 11.60 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.5 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 6.20...6.90 Rack travel in mm : 2.00 rpm : 420...480 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 250 Pressure : 11.30...11.40 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 400 Rack travel in m: 12.10...12.40 3rd pressure hPa : 700 Rack travel in m: 12.60...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Speed Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 53.0...55.0 1000 s: (51.0...57.0)

1st version 1mm rack travel less than full load rack tr: 11.60 rpm : 1340...1345 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0) LOW IDLE rpm : 350 Speed Rack travel in mm : 6.20...6.90 Del.quantity cm3/: 10.0...12.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Test hydr. locking device for starting with 500...1999 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : KHD 12,7 T7 : 07.02.89 Edition Phasing Replaces : ISO-4113 Test oil : 0 403 548 030 Combination no. BASIC SETTING Injection pump 1st speed Pump designation : PE8MW100/720LS1117 : 0 413 508 101 EP type number Governor Governor design. : RQ300/1000MW104 Del.quantity cm3/: 9.1...9.3 Governer no. : 0 420 082 034 Customer-spec. information Customer Spread Engine : F 8L 513 2nd speed rpm : 300.0 Rack travel in mm : 7.9...8.1 1st version kW : 150.0 : 2000 Rated speed Del.guantity cm3/: 0.5...0.9 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. , C : 38...42 (B) Setting of injection pump Overflow valve with governor : 1 417 413 000 GUIDE SLEEVE TRAVEL Inlet press., bar: 1.50 1st speed rpm : 1100 travel mm Test nozzle holder 2nd speed assembly : 0 681 343 009 travel mm 3rd speed Openina travel mm pressure, bar : 172...175 4th speed travel mm Test lines : 1 680 740 014 GUIDE SLEÉVE POSITION Control-lever position Outside diameter x Wall thickness Speed : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version per values Speeu Del.quantity 1000 Speed BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread : 3.10...3.20 Prestroke mm

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

: 0-45-90-135-180-225-270-315 Tolerance + - ... : 0.50 (0.75)rpm : 1000 Rack travel in mm : 11.30...11.40 100 s: (8.9...9.5) cm3 : 0.3100 s: (0.6) 100 s: (0.3...1.1) cm3 : 0.3100 s: (0.5) : 8.90...9.30 : 1050 : 6.90...7.10 : 350 : 3.90...4.50 : 300 : 2.00...2.40 Degree: -2 rpm : 550 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1000 : 91.0...93.0 : (89.0...95.0) : 3.50 : (6.00)

rpm

rpm

rpm

cm3

RATED SPEED

1000

: 1- 8- 7- 2- 6- 5-4- 3

1st version Control lever position degrees: 30...38 Setting point: Speed rpm : 550 Rack travel in mm : 20.0 Testing: 1st rack travel in: 10.30 rpm : 1040...1055 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 3rd rack travel in: 4.00 4th rack travel in: 1180 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 12...20 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 8.0 Testing: rpm : 100 Speed Minimum rack trave: 9.50 Speed rpm : 300 Rack travel in mm : 7.90...8.10 Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.30...11.40 rpm : 600 2nd speed Rack travel in m: 12.80...12.90 3rd speed rpm : 850 Rack travel in m: 12.20...12.50 START CUT-OUT 1/min : 220 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 600 Del.quantity cm3/: 101.5...104.5 1000 s: (99.0...107.0) cm3 : 5.00Spread

1000 s: (7.)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 rpm : 1040...1055 Speed

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.90...8.10 Del.quantity cm3/ : 5.0...9.0 1000 s: (3.0...11.0) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

Set warm starting fuel delivery 90...95 cm 3 /1000 strokes at n = 100 min -1 at spool

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : KHD 13,4D16 Test sheet Edition : 16.06.89 Replaces : ISO-4113 Test oil Combination no. : 0 403 548 034 Injection pump Pump designation : PE8MW100/720LS1128 EP type number : 0 413 508 103 Governor Governor design. : RQ300/1150MW63-6 Governer no. : 0 420 082 038 Customer-spec. information Customer : KHD Engine : BF 8L 513 : 243.0 1st version kW : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

: 3.10...3.20

: (3.05...3.25)

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

Phasing : Tolerance +, : BASIC SETTING	0-45-90-135-180-225 270-315 0.50 (0.75)
1st speed rpm:	1150
Rack travel in mm :	13.6013.70
Del.quantity cm3/:	15.115.3
100 s:	(14.915.5)
Spread cm3:	0.3
100 s:	(0.6)
Rack travel in mm : Del.quantity cm3/ : 100 s: Spread cm3 :	300.0 6.66.8 1.31.7 (1.11.9) 0.3 (0.5)
(B) Setting of injection pump with governor	
GUIDE SLEEVE TRAVEL 1st speed rpm : travel mm : 2nd speed rpm : travel mm : 3rd speed rpm : travel mm : 4th speed rpm : travel mm :	1280 9.7010.30 1210 7.407.60 650 5.205.80 300 0.801.20
GUIDE SLEEVE POSITIO Control-lever position Degree: Speed rpm: Rack travel in mm:	ion -2 750
FULL LOAD DELIV. AT	FULL LOAD STOP
Aneroid pressure h: Del.quantity: 1000: Spread cm3:	1150 900 151.0153.0 (149.0155.0) 3.50 (6.00)
RATED SPEED	

Firing order : 1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

1st version Control lever position degrees: 40...48 Setting point: Rack travel in mm: 15.5 Testing: 1st rack travel in: 12.60 Speed rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1270...1300 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 8...16 Setting point w/out bumper spring rpm Rack travel in mm: 6.7 Testing: Speed rpm : 100 Minimum rack trave: 8.20 rpm : 300 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 rpm : 500...540 Speed CONSTANT REGULATION rpm : 320...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 710 Rack travel mm : 13.00...13.10 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.80...11.90 2nd pressure hPa : 530 Rack travel in m: 12.20...12.50 3rd pressure hPa : 900 Rack travel in m: 13.60...13.70 START CUT-OUT 1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

G16

1st version Aneroid pressure h: 900 rpm : 700 Del.quantity cm3/: 147.5...150.5 1000 s: (145.0...153.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 450 Del.quantity cm3/ : 108.0...110.0 1000 s: (106.0...112.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...150.0 1000 s: (137.0...153.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 13.0...17.0 1000 s: (11.0...19.0) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks : MB 6,0 e Test sheet Edition : 01.09.88 Phasing : 8.1.88 Replaces : ISO-4113 Tolerance + - ., .: 0.50 (0.75)Test oil Combination no. : 9 400 085 288 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A90D410RS2596-1 EP type number : 9 400 084 008 1st speed rpm: 1300 Governor Rack travel in mm : 13.10...13.20 : RQV300...1300AB1066-Governor design. : 9 420 080 230 Governer no. Del.quantity cm3/: 8.6...8.7 Customer-spec. information Customer : DAIMLER-BENZ Spread cm3 : 0.3: OM 366 A Engine 100 s: (0.5) : 127.0 1st version kW rpm : 300.0 : 2600 Rated speed 2nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.0...1.4 TEST BENCH REQUIREMENTS Test oil cm3 : 0.2Spread 100 s: (0.4) inlet temp. , C : 38...42 Overflow valve (B) Setting of injection pump : 1 417 413 047 with governor Inlet press., bar: 1.00 GUIDE SLEEVE TRAVEL 1st speed rpm : 1375 Test nozzle holder travel mm assembly : 0 681 343 009 2nd speed rpm : 300 travel mm 3rd speed Openina pressure, bar : 172...175 travel mm 4th speed rpm : 800 travel mm rpm : 1100 : 1 680 750 014 Test lines 5th speed travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 Control-lever position x Length mm Degree: -1 (A) Injection pump setting values rpm : 1375 Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

: 0-60-120-180-240-300 100 s: (8.4...8.9) 100 s: (0.8...1.6) : 8.40...8.50 : 0.90...1.30 rpm : 500 : 2.20...2.60 : 4.30...4.70 : 6.10...6.40 Speed rpm : 1300 Aneroid pressure h: 1000 Del.quantity : 86.0...87.0 1000 : (84.0...89.0)

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.00...2.10 : (1.95...2.15)

: 3.00 Spread cm3 1000 : (5.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 12.10 rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1470...1500 Speed 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 19...27 Testina: Speed rpm Minimum rack trave: 10.00 Speed rpm: 300
Rack travel in mm: 8.40...8.60
Rack travel in mm: 2.00 rpm : 570...630 Speed CONSTANT REGULATION rpm : 590...660 Speed TORQUE CONTROL Dimension a mm : 1.00 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 13.10...13.20 : 800 2nd speed rpm Rack travel in m: 14.10...14.20 3rd speed rpm : 1000 Rack travel in m: 13.90...14.10 4th speed rpm : 1150 Rack travel in m: 13.30...13.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure

hPa : 1000 mm : 14.10...14.20 Rack travel mm

Measurement 1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 12.80...12.90 2nd pressure hPa : 750

Rack travel in m: 13.90...14.00

3rd pressure hPa : 650

Rack travel in m: 13.20...13.40

START CUT-OUT

1/min : 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 800

Del.quantity cm3/: 89.0...91.0

1000 s: (86.5...93.5) Aneroid pressure h: 1000 Speed rpm : 1000 Del.quantity_cm3/: 90.0...92.0

1000 s: (87.5...94.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 66.5...68.5 1000 s: (64.5...70.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 71.0...81.0 1000 s: (68.0...84.0) Rack travel in mm : 14.70...15.70

:

Remarks:

G18

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 10,0q11 : 02.05.89 : 1.9.88 : ISO-4113 Test sheet Edition Replaces Test oil Combination no. : 9 400 087 295 Injection pump Pump designation : PE6P110A320RS3108Y EP type number : 0 411 816 729 Governor Governor design. : RQV250...1100PA589-1 Governer no. : 9 420 080 166 Customer-spec. information Customer : VOLVO Engine : THD 100 EC 1st version kW : 180.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. ., C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening | pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-60-120-180-240-300 Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 700 Rack travel in mm : 11.10...11.20 Del.guantity cm3/: 13.8...14.0 100 s: (13.5...14.3) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 3.0...3.4 100 s: (2.7...3.6) cm3 : 0.3Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.20...1.30 travel mm 2nd speed rpm : 370 travel mm : 2.60...3.00 3rd speed rpm : 430 : 3.50...3.90 travel mm 4th speed rpm : 1160 : 8.10...8.30 travel mm 5th speed rpm : 1210 : 9.40...9.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1180 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 138.0...143.0)

Firing order : 1-5-3-6-2-4

G19

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.00...3.10

: (2.95...3.15)

cm3 : 4.00 Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

rpm : 1160...1170 2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 6.70 : 250 rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 11.10...11.20 Rack travel mm

Measurement

Speed 1/min: 500
Rack travel in m: 9.60...9.80
2nd pressure hPa : 275

Rack travel in m: 9.90...10.00

3rd pressure hPa : 400

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700

Del.quantity cm3/: 105.5...108.5 1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 30.0...34.0 1000 s: (27.5...36.5)

cm3 : 3.00

Spread 1000 s: (6.00)

Remarks:

Delivery-value spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Omnibus

Firing order : 1- 2- 4- 5- 3 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Phasing Test sheet : MB 10,0 e 2 : 0-72-144-216-288 Edition : 02.05.89 Tolerance + - ... : 0.50 (0.75)Replaces : 11.8.87 : 150-4113 Test oil Time to cyl. no. : 1 Combination no. : 9 400 087 308 BASIC SETTING Injection pump Pump designation : PE5P110A720RS479 1st speed rpm: 1050 EP type number : 9 400 087 040 Rack travel in mm : 12.20...12.30 Governor Governor design: : RQ300/1050PA718-1 Governer no. : 9 420 080 187 Del.quantity cm3/: 16.1...16.3 100 s: (15.8...16.6) Customer-spec. information : DAIMLER-BENZ BRASIL Customer Spread cm3 : 0.4: 0M355-5 A Engine 100 s: (0.7) 1st version kW : 170.0 rpm : 300.0: 2100 2nd speed Rated speed Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.1...1.6 100 s: (-) cm3 : 0.4 100 s: (0.7) Test oil Spread inlet temp. _, C . : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 000 Control-lever position Degree: -3 rpm : 600 Inlet press., bar: 1.50 Rack travel in mm : 19.20...20.80 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Openina . rpm : 1050 pressure, bar : 172...175 Speed Aneroid pressure h: 700 : 161.0...163.0 Del.quantity 1000 : (158.0...166.0) Test lines : 1 680 750 004 cm3 : 4.00Spread 1000 : (7.50) Outside diameter x Wall thickness : 6.00x1.50x600 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed rpm per values : 600 Rack travel in mm : 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 11.20 : 3.35...3.45 Speed rpm : 1095...1110 Prestroke mm

2nd rack travel in: 4.00

Speed

: 1150...1180

G21

: (3.30...3.50)

Rack travel in mm : 9.00...12.00

4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 6.5 Testing: Speed : 100 rpm Minimum rack trave: 8.50 : 300 Speed rom Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 375...415 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 12.20...12.30 2nd speed rpm : 600 Rack travel in m: 13.10...13.20 3rd speed rpm : 900 Rack travel in m: 12.70...13.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rpm Pressure Rack travel mm : 13.10...13.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 400 Rack travel in m: 12.40...12.50 3rd pressure hPa : 250 Rack travel in m: 11.10...11.30 START CUT-OUT 1/min: 230 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 mgn Del.quantity cm3/: 177.0...181.0 1000 s: (174.0...184.0) Aneroid pressure h: 700

: 900

rpm

Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 112.5...115.5 1000 s: (110.0...118.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (-)

Rack travel in mm : 13.30...14.30

.

Remarks:

G22

Speed

: 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.20...4.30) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : FOR 7,8 c : 02.05.89 : 12.11.87 Test sheet Edition Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Combination no. : 9 400 087 376 Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3193 EP type number : 9 400 087 057 BASIC SETTING Governor Governor design. : RSV650...1250P8A528 rpm : 1200 1st speed Governer no. : 9 420 082 323 Rack travel in mm : 13.20...13.30 Customer-spec. information Del.guantity cm3/: 13.2...13.4 Customer : FORD FNH : 7.8 L 100 s: (13.0...13.6) Engine : 140.0 : 2500 cm3 : 0.51st version kW Spread Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 650.0 2nd speed Rack travel in mm: 5.9...6.1 Test oil Del.quantity cm3/: 0.8...1.2 inlet temp. , C : 38...42 100 s: (0.5...1.5) cm3 : 0.3 Overflow valve Spread 100 s: (0.5) : 9 401 087 214 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 assembly : 1 682 901 017 Opening. : 207...210 pressure, bar Governor spring pre-tension Click setting x : 3.25Orifice plate diameter mm FULL LOAD DELIV. AT FULL LOAD STOP : 0,6 1st version rpm : 1200 Test lines : 1 680 750 015 Speed : 132.0...134.0 Del.quantity 1000 : (130.0...136.0) cm3 : 5.00 Outside diameter x Wall thickness Spread 1000 : (9.00) : 6.00x1.50x600 x Length mm (A) Injection pump setting values RATED SPEED 1st version

Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Testing: 1st rack travel in: 12.20

position degrees: 49...57

Control Lever

rpm : 1260...1270 Speed 2nd rack travel in: 4.00 : 1300...1320 Speed rpm 4th rack travel in: 1400 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring rpm : 650 Rack travel in mm: 6.0 Testing: Speed : 600 rom Minimum rack trave: 10.00 Speed : 650 rpm Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 : 685...745 Speed rpm FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 110.0...114.0 1000 s: (108.0...116.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1260...1270 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 650 Speed Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 8.0...12.0 1000 s: (5.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: APPLICATION

Combine-harvester

G24

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: FOR 7,8 c 1 : 02.05.89 Test sheet Edition : 1.9.88 Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 377

Injection pump

Pump designation : PES6P110A720RS3193

: 9 400 087 057 EP type number

Governor

Governor design. : RSV650...1250P8A530-

: 9 420 082 324 Governer no.

Customer-spec. information

: FORD - FNH Customer

Engine : 7.8 l

: 165.0 : 2500 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35 : (4.20...4.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference ., CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1000

Del.quantity : 137.0...139.0 1000 : (135.0...141.0)

Spread

cm3 : 5.00 1000 : (9.00)

G25

RATED SPEED 1st version Control Lever position degrees: 48...56 Testina: 1st rack travel in: 12.50 Speed rpm: 1260...1270 2nd rack travel in: 4.00 Speed rpm : 1300...1320 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring : 650 rpm Rack travel in mm: 6.0 Testing: Speed rpm : 600 Minimum rack trave: 10.00 Speed rpm : 650
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00 Speed rpm : 685...745 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1200 rpm Pressure hPa : 1000 : 13.50...13.60 Rack travel mm Measurement 1/min: 1200 Speed 1st pressure hPa : Rack travel in m: 9.90...10.00 2nd pressure hPa : 600 Rack travel in m: 12.50...12.60

3rd pressure hPa : 400 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 800 Del.quantity cm3/: 117.5...119.5 1000 s: (115.5...121.5) Aneroid pressure h: -Speed : 1200 man

Del.quantity cm3/: 79.0...81.0 1000 s: (77.0...83.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1260...1270

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 650 Speed Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

: 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.20...4.40) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : FOR 7,8 c 2 Test sheet Edition : 02.05.89 : 1.9.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + -., : 0.50 (0.75) Combination no. : 9 400 087 378 Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3193 : 9 400 087 057 EP type number BEGINNING OF DELIVERY DIFFERENCE Governor Governor design. : RSV650...1250P8A530 betw. rack trav. m: 9.00...12.00 Governer no. : 9 420 082 325 & maximum rack tra: 21.00 Difference , CS : 2.00...3.00 Customer-spec. information BASIC SETTING Customer : FORD -FNH Engine : 7.8 L 1st speed rpm : 1200 Rack travel in mm : 14.60...14.70 1st version kW : 180.0 : 2500 Rated speed Del.quantity cm3/: 15.5...15.7 TEST BENCH REQUIREMENTS 100 s: (15.3...15.9) Test oil inlet temp. ., C : 38...42 Spread cm3 : 0.5Overflow valve 100 s: (0.9) : 1 417 413 025 2nd speed rpm : 650.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5 Inlet press., bar: 1.50 100 s: (0.8...1.7) Test nozzle holder assembly : 1 688 901 017 cm3 : 0.3Spread 100 s: (0.5) Opening pressure, bar : 207...210 GUIDE SLEEVE POSITION Control-lever position Orifice plate Dearee: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 diameter mm : 0,6 Test lines : 1 680 750 015 Governor spring pre-tension Click setting x : 3.00Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP : 6.00x1.50x600 x Length mm 1st version rpm : 1200 (A) Injection pump setting values Speed Insp. values in parentheses Aneroid pressure h: 1000 Del.quantity : 155.0...157.0 Set equal delivery quant. 1000 : (153.0...159.0) per values : 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 13.60 Speed rpm : 1260...1270 2nd rack travel in: 4.00 rpm : 1305...1325 Speed 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 650 Rack travel in mm: 6.0 Testing: : 600 Speed rpm Minimum rack trave: 10.00 rpm : 650 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed : 685...745 rpm Aneroid/Altitude Compensator Test 1st version Setting : 1200 Speed rom hPa : 1000 Pressure : 14.60...14.70 Rack travel mm Measurement 1/min: 1200 Speed 1st pressure hPa : -Rack travel in m: 11.50...11.60 2nd pressure hPa : 600 Rack travel in m: 14.00...14.10 3rd pressure hPa : 400 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650 Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 11.0...15.0 1000 s: (8.5...17.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

Speed

Speed

Aneroid pressure h: 1000

Aneroid pressure h: -

rpm

man

: 800

: 1200

Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0)

Del.quantity cm3/: 107.0...109.0 1000 s: (105.0...111.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : FOR 7,8 d : 02.05.89 Test sheet Edition : 1.9.88 Replaces : ISO-4113 Test oil Phasing Combination no. : 9 400 087 379 Injection pump Pump designation : PES6P110A720RS3150 EP type number : 9 400 087 046 Governor Governor design. : RQV350...1200PA863 Governer no. : 9 420 080 242 Customer-spec. information Customer : FORD (FNH) : 7.8 L TC Engine 1st speed 1st version kW : 138.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Spread Overflow valve : 1 417 413 025 2nd speed Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Spread Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm

: 4.25...4.35 : (4.20...4.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference . CS : 2.00...3.00 BASIC SETTING rpm: 1200 Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 12.7...12.9 100 s: (12.5...13.1) cm3 : 0.5100 s: (0.9) rpm : 350.0Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 2.3...2.7 100 s: (2.0...2.9) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1360 : 8.40...8.50 travel mm rpm : 1000 2nd speed travel mm : 5.50...5.90 rpm : 800 3rd speed travel mm : 4.40...4.80 : 500 4th speed rpm 2.60...3.00 travel mm : 300 5th speed rpm : 0.90...1.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1440 Rack travel in mm : < 8.00

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses

Measurement $1/\min : 500$ FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st version 1st pressure hPa : -Rack travel in m: 12.20...12.30 2nd pressure hPa : 267 Rack travel in m: 12.60...12.70 3rd pressure hPa : 335 Rack travel in m: 13.30...13.50 Speed rpm : 1200 Aneroid pressure h: 600 Del.quantity : 127.5...129.5 1000 : (125.5...131.5) Spread cm3 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 290 (310) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 42...50 1st version Testing: 1st rack travel in: 12.00 Aneroid pressure h: 600 rpm : 1260...1270 rpm : 750 Del.quantity cm3/: 115.0...119.0 1000 s: (113.0...121.0) 2nd rack travel in: 4.00 Speed rpm : 1385...1415 4th rack travel in: 1500 Speed rpm : 0.00...1.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 74.5...76.5 1000 s: (72.5...78.5) LOW IDLE 1 Control lever position degrees: 13...21 BREAKAWAY Testing: Speed rpm : 100 1st version Minimum rack trave: 12.00 Speed rpm : 350 Rack travel in mm : 8.00...8.20 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 1260...1270 CONSTANT REGULATION rpm : 390...460 Speed STARTING FUEL DELIVERY TORQUE CONTROL Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (-)
Rack travel in mm : 20.00...21.00 Dimension a mm : 0.80 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 13.00...13.10 d speed rpm : 750 Rack travel in m: 13.80...13.90 2nd speed LOW IDLE 3rd speed rpm : 900 Rack travel in m: 13.70...13.90 rpm : 350 4th speed rpm : 1100 Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 23.0...27.0 1000 s: (20.5...29.5) Spread cm3 : 3.50 1000 s: (5.50) Rack travel in m: 13.00...13.10 Aneroid/Altitude Compensator Test Remarks: 1st version Setting Set shutoff stop 1.5...2.0 mm before Speed : 500 rpm hPa : 600 shutoff. Pressure Rack travel mm : 13.80...13.90

H05

: 4.25...4.35 : (4.20...4.40) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : FOR 7,8 e : 02.05.89 Edition : 1.9.88 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 9 400 087 380 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P110A720RS3151 EP type number : 9 400 087 047 BEGINNING OF DELIVERY DIFFERENCE Governor betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Governor design. : RQV350...1200PA863-1 Governer no. : 9 420 080 243 Difference ., CS : 2.00...3.00 Customer-spec. information : FORD (FNH) BASIC SETTING Customer Engine : 7.8 1 TC 1st speed rpm: 1200 : 157.0 : 2400 Rack travel in mm : 13.30...13.40 1st version kW Rated speed Del.quantity cm3/: 13.2...13.4 TEST BENCH REQUIREMENTS 100 s: (13.0...13.6) Test oil cm3 : 0.5inlet temp. .. C : 38...42 Spread 100 s: (0.9) Overflow valve : 1 417 413 025 2nd speed rpm : 350.0 Rack travel in mm : 8.0...8.2 Inlet press., bar: 1.50 Del.quantity cm3/ : 2.6...3.0 Test nozzle holder 100 s: (2.3...3.2) cm3 : 0.3assembly : 1 688 901 017 Spread 100 s: (0.5) Opening : 207...210 pressure, bar (B) Setting of injection pump with governor Orifice plate diameter mm : 0,6 GUIDE SLEEVE TRAVEL 1st speed rpm : 1360 : 8.40...8.50 travel mm : 1000 : 1 680 750 015 Test lines 2nd speed rom 5.50...5.90 travel mm 3rd speed : 800 Outside diameter rpm x Wall thickness travel mm : 4.40...4.80 : 6.00X1.50X600 : 500 x Length mm 4th speed rom : 2.60...3.00 travel mm : 300 (A) Injection pump setting values 5th speed rpm Insp. values in parentheses Set equal delivery quant. : 0.90...1.30 travel mm per values GUIDE SLEEVE POSITION Control-lever position Degree: -1 BEGINNING OF DELIVERY

rbm : 1440

Rack travel in mm : < 8.00

Test pressure, bar: 25...27

Measurement 1/min : 500 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st pressure hPa : -1st version Rack travel in m: 11.90...12.00 rpm : 1200 Speed 2nd pressure hPa : 420 Aneroid pressure h: 600 Rack travel in m: 12.50...12.60 3rd pressure hPa : 505 Rack travel in m: 13.40...13.60 Del.quantity : 132.0...134.0 1000 : (130.0...136.0) cm3 : 5.00 1000 : (9.00) Spread START CUT-OUT RATED SPEED Speed 1/min: 290 (310) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 43...51 Testing: 1st version 1st rack travel in: 12.30 Aneroid pressure h: 600 rpm : 1260...1270 Speed Speed rpm : 750 Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0) 2nd rack travel in: 4.00 rom : 1390...1420 Speed 4th rack travel in: 1520 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 70.0...72.0 1000 s: (68.0...74.0) Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 13...21 BREAKAWAY Testing: Speed rpm : 1001st version Minimum rack trave: 12.00 1mm rack travel less than Speed rpm : 350 Rack travel in mm : 8.00...8.20 full load rack tr: 12.30 rpm : 1260...1270 Speed CONSTANT REGULATION Speed rpm : 390...460 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.70 Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (-) Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 13.30...13.40
2nd speed rpm : 750
Rack travel in m: 14.00...14.10
3rd speed rpm : 900 Rack travel in mm : 20.00...21.00 LOW IDLE Rack travel in m: 13.90...14.10 rpm : 350 Speed 4th speed rpm : 1120 Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 26.0...30.0 1000 s: (23.5...32.5) Rack travel in m: 13.30...13.40 cm3 : 3.50 Aneroid/Altitude Spread 1000 s: (5.50) Compensator Test Remarks: 1st version Setting Set shutoff stop 1.5...2.0 mm before rpm : 500 Speed hPa : 600 Pressure shutoff. Rack travel mm : 14.00...14.10

Prestroke mm : 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS : (4.20...4.40) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : FOR 7,8 d 1 : 02.05.89 Edition : 1.9.88 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 381 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P110A720RS3150 EP type number : 9 400 087 046 BEGINNING OF DELIVERY DIFFERENCE Governor betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference, CS : 2.00...3.00 Governor design. : RQV350...1200PA863-3 : 9 420 080 244 Governer no. Customer-spec. information BASIC SETTING Customer : FORD (FNH) : 7.8 L TC rpm: 1200 Engine 1st speed 1st version kW Rack travel in mm : 12.90...13.00 : 160.0 : 2400 Rated speed Del.quantity cm3/: 12.5...12.7 TEST BENCH REQUIREMENTS 100 s: (12.3...12.9) Test oil inlet temp. . C . : 38...42 cm3 : 0.5Spread 100 s: (0.9) Overflow valve : 1 417 413 025 2nd speed rpm : 350.0 Rack travel in mm : 8.0...8.2 Inlet press., bar: 1.50 Del.quantity cm3/: 2.3...2.7 100 s: (2.1...2.9) Test nozzle holder : 1 688 901 017 Spread cm3 : 0.3assembly 100 s: (0.5) Opening : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,6 1st speed rpm : 1360 : 8.40...8.50 travel mm Test lines : 1 680 750 015 rpm : 1000 2nd speed : 5.50...5.90 travel mm rpm : 800 Outside diameter 3rd speed : 4.40...4.80 x Wall thickness travel mm rpm : 500 : 2.60...3.00 rpm : 300 : 6.00x1.50x600 x Length mm 4th speed travel mm (A) Injection pump setting values 5th speed : 0.90...1.30 Insp. values in parentheses travel mm Set equal delivery quant.

GUIDE SLEEVE POSITION

Speed

Control-lever position

Rack travel in mm : < 8.00

Degree: -1

rpm : 1440

per values

BEGINNING OF DELIVERY

Test pressure, bar; 25...27

Measurement $1/\min : 500$ FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st pressure hPa : -1st version rpm : 1200 Rack travel in m: 12.90...13.00 Speed 2nd pressure hPa : 333 Rack travel in m: 13.20...13.30 Aneroid pressure h: 600 Del.quantity : 125.5...127.5 1000 : (123.5...129.5) 3rd pressure hPa : 380 Rack travel in m: 13.70...13.90 cm3 : 5.00 1000 : (9.00) Spread START CUT-OUT RATED SPEED Speed 1/min: 290 (310) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 42...50 Testina: 1st version 1st rack travel in: 11.90 Aneroid pressure h: 600 Speed rpm: 1260...1270 2nd rack travel in: 4.00 Speed rpm: 750
Del.quantity cm3/: 117.0...121.0
1000 s: (115.0...123.0) Speed rpm : 1380...1410 4th rack travel in: 1500 Aneroid pressure h: rpm_ : 500 rpm : 0.00...1.00Speed Speed Del.quantity cm3/: 84.0...86.0 1000 s: (82.0...88.0) LOW IDLE 1 Control lever position degrees: 13...21 BREAKAWAY Testing: Speed rpm : 100 Minimum rack trave: 12.00 1st version 1mm rack travel less than rpm : 350 Rack travel in mm : 8.00...8.20 full load rack tr: 11.90 Speed rpm : 1260...1270 CONSTANT REGULATION rpm : 390...460 STARTING FUEL DELIVERY Speed TORQUE CONTROL Dimension a mm : 1.10 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.90...13.00 nd speed rpm : 750 Rack travel in m: 14.00...14.10 2nd speed LOW IDLE 3rd speed rpm : 870 Rack travel in m: 13.90...14.10 4th speed rpm : 1100 Rack travel in m: 12.90...13.00 rpm : 350 Speed Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 23.0...27.0
1000 s: (21.0...29.0)
Spread cm3 : 3.50 Aneroid/Altitude 1000 s: (5.50) Compensator Test Remarks: 1st version Setting Set shutoff stop 1.5...2.0 mm before Speed : 500 rpm hPa : 600 shutoff. Pressure Rack travel mm : 14.00...14.10

: 4.25...4.35 : (4.20...4.40) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : FOR 7,8 e 1 Edition : 02.05.89 : 1.9.88 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 382 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3151 : 9 400 087 047 BEGINNING OF DELIVERY DIFFERENCE EP type number Governor Governor design. : RQV350...1200PA863-2 betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference, CS: 2.00...3.00 Governer no. : 9 420 080 245 Customer-spec. information Customer : FORD (FNH) BASIC SETTING Engine : 7.8 L TC 1st speed rpm : 1200 1st version kW : 160.0 Rack travel in mm : 13.70...13.80 : 2400 Rated speed Del.guantity cm3/: 13.6...13.8 TEST BENCH REQUIREMENTS 100 s: (13.4...14.0) Test oil inlet temp. . C : 38...42 cm3 : 0.5Spread 100 s: (0.9) Overflow valve : 1 417 413 025 rpm : 350.02nd speed Rack travel in mm : 8.0...8.2 Inlet press., bar: 1.50 Del.quantity cm3/ : 2.4...2.8 100 s: (2.1...3.0) cm3 : 0.3 Test nozzle holder assembly : 1 688 901 017 Spread 100 s: (0.5) Opening pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate diameter mm : 0,6 GUIDE SLEEVE TRAVEL 1st speed rpm : 1360 travel mm : 1 680 750 015 Test lines 2nd speed travel mm rpm : 800 Outside diameter 3rd speed x Wall thickness travel mm 4th speed rpm : 500 : 6.00x1.50x600 x Lenath mm travel mm (A) Injection pump setting values

: 8.40...8.50 rpm : 1000 : 5.50...5.90 : 4.40...4.80 : 2.60...3.00 rpm : 300 5th speed : 0.90...1.30 travel mm GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1440 Speed Rack travel in mm : < 8.00

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Measurement 1/min: 500 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st version 1st pressure hPa : -Rack travel in m: 12.40...12.50 2nd pressure hPa : 345 Rack travel in m: 12.90...13.00 Speed rpm : 1200 Aneroid pressure h: 600 Anerota p. ... Del.quantity 1000 : 136.0...138.0 : (134.0...140.0) 3rd pressure hPa : 420 : 5.00 Rack travel in m: 13.60...13.80 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min: 290 (310) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 43...51 Testing: 1st version 1st rack travel in: 12.70 Aneroid pressure h: 600 rpm : 1260...1270 : 750 Speed rpm Del.quantity cm3/: 119.0...123.0 1000 s: (117.0...125.0) 2nd rack travel in: 4.00 Speed rpm : 1400...1430 4th rack travel in: 1530 Speed rpm: 0.00...1.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 76.5...78.5 1000 s: (74.5...80.5) LOW IDLE 1 Control lever position degrees: 13...21 BREAKAWAY Testing: Speed rpm : 100 1st version Minimum rack trave: 12.00 1mm rack travel less than rpm : 350 Rack travel in mm: 8.00...8.20 full load rack tr: 12.70 Speed rpm : 1260...1270 CONSTANT REGULATION rpm : 390...460 STARTING FUEL DELIVERY Speed TORQUE CONTROL Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (-) Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 13.70...13.80 Rack travel in mm : 19.00...21.00 rpm : 750 2nd speed Rack travel in m: 14.30...14.40 LOW IDLE 3rd speed rpm : 910 Rack travel in m: 14.20...14.40 4th speed rpm : 1040 Rack travel in m: 13.70...13.80 rpm : 350 Speed Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 24.0...28.0 1000 s: (21.5...30.5) Aneroid/Altitude Spread cm3 : 3.50 1000 s: (5.50) Compensator Test Remarks: 1st version Setting Set shutoff stop 1.5...2.0 mm before Speed rpm : 500 hPa : 600 shutoff. Pressure Rack travel mm : 14.30...14.40

80H

: 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.20...4.40) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : FOR 7,8 e 2 Edition : 02.05.89 : 1.9.88 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 : 9 400 087 383 Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3151 : 9 400 087 047 BEGINNING OF DELIVERY DIFFERENCE EP type number Governor Governor design. : RQV350...1200PA863-4 betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference, CS: 2.00...3.00 : 9 420 080 246 Governer no. Customer-spec. information : FORD (FNH) BASIC SETTING Customer : 7.8 L TC rpm: 1200 Engine 1st speed : 179.0 Rack travel in mm : 14.50...14.60 1st version kW Rated speed : 2400 Del.quantity cm3/: 14.9...15.1 TEST BENCH REQUIREMENTS 100 s: (14.7...15.3) Test oil inlet temp. , C : 38...42 Spread cm3 : 0.5Overflow valve 100 s: (0.9) : 1 417 413 025 rpm : 350.0 2nd speed Rack travel in mm : 8.0...8.2 Inlet press., bar: 1.50 Del.quantity cm3/: 2.4...2.8 100 s: (2.1...3.0) Test nozzle holder : 1 688 901 017 cm3 : 0.3assembly Spread 100 s: (0.5) **Opening** : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0.6 rpm : 1360 1st speed : 8.40...8.50 travel mm rpm : 1000 Test lines : 1 680 750 015 2nd speed : 5.50...5.90 travel mm rpm : 800 Outside diameter 3rd speed x Wall thickness : 4.40...4.80 travel mm rpm : 500 : 2.60...3.00 rpm : 300 : 6.00x1.50x600 x Length mm 4th speed travel mm (A) Injection pump setting values 5th speed : 0.90...1.30 Insp. values in parentheses travel mm Set equal delivery quant. GUIDE SLEEVE POSITION per values Control-lever position BEGINNING OF DELIVERY Degree: -1

Speed rpm : 1440 Rack travel in mm : < 8.00

Test pressure, bar: 25...27

Measurement 1/min: 500 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st version 1st pressure hPa : -Rack travel in m: 12.10...12.20 Speed rpm : 1200 Aneroid pressure h: 700 2nd pressure hPa : 430 : 149.5...151.5 Rack travel in m: 13.30...13.40 Del.quantity 1000 : (147.5...153.5) 3rd pressure hPa : 532 : 5.00 Rack travel in m: 14.30...14.50 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 290 (310) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 44...52 Testing: 1st version 1st rack travel in: 13.50 Aneroid pressure h: 700 rpm : 1260...1270 : 750 Speed rpm Speed Del.quantity cm3/: 128.0...132.0 1000 s: (126.0...134.0) 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1520 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 72.0...74.0 1000 s: (70.0...76.0) Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 13...21 BREAKAWAY Testing: Speed rpm : 100 Minimum rack trave: 12.00 1st version 1mm rack travel less than rpm : 350 Rack travel in mm : 8.00...8.20 full load rack tr: 13.50 Speed rpm : 1260...1270 CONSTANT REGULATION rpm : 390...460 STARTING FUEL DELIVERY Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 14.50...14.60 rpm : 750 2nd speed Rack travel in m: 15.00...15.10 LOW IDLE 3rd speed rpm : 910 Rack travel in m: 14.90...15.10 4th speed rpm : 1040 Rack travel in m: 14.50...14.60 rpm : 350 Speed Rack travel in mm: 8.00...8.20 Del.quantity cm3/: 24.0...28.0 1000 s: (21.5...30.5) cm3 : 3.50 Aneroid/Altitude Spread 1000 s: (5.50) Compensator Test Remarks: 1st version Setting rpm : 500 hPa : 700 Set shutoff stop 1.5...2.0 mm before Speed rpm Pressure shutoff. : 15.00...15.10 Rack travel mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.95...4.05 : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : CAT 10,5 g4 : 02.05.89 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ... : 0.50 (0.75)Combination no. : 9 400 087 384 Injection pump Time to cyl. no. : 1 Pump designation : PES6P100A720LS502 EP type number : 9 400 087 050 BASIC SETTING Governor Governor design. : RQV350...1000PA828-2 rpm: 1000 1st speed : 9 420 080 247 Governer no. Rack travel in mm : 10.60...10.70 Customer-spec. information Del.guantity cm3/: 12.2...12.4 Customer : CATERPILLAR : 3306 DIT. 100 s: (12.0...12.6) Engine : 140.0 Spread cm3 : 0.31st version kW : 2000 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Test oil Rack travel in mm: 6.4...6.6 Del.quantity cm3/ : 1.3...1.7 inlet temp. .. C . : 38...42 100 s: (1.0...1.9) cm3 : 0.3 Overflow valve Spread : 9 401 087 348 100 s: (0.5) Inlet press., bar: 2.00 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL rpm : 1055 1st speed : 8.50...8.60 **Opening** travel mm rpm : 300 pressure, bar : 207...210 2nd speed : 1.10...1.40 travel mm rpm : 500 : 3.40...3.70 rpm : 700 3rd speed Orifice plate diameter mm : 0,6 travel mm 4th speed : 5.20...5.50 travel mm Test Lines : 1 680 750 008 rpm : 900 5th speed : 6.80...7.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X2.00X600 x Length mm Control-lever position Degree: -1 rpm : 1055 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 2...3 1st version

FULL LOAD DELIV. AT FULL LOAD STOP

Speed rpm : 1000 Aneroid pressure h: 500

Del.quantity : 122.0...126.0) : 3.50 Spread cm3 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 64...72 Testina: 1st rack travel in: 9.70 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Speed rpm : 1120...1150 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...81 Testing: Speed : 100 rpm Minimum rack trave: 8.50 Speed rpm : 350 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 500...560 Speed rom CONSTANT REGULATION rpm : 370...440 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 500 Pressure : 10.60...10.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 145 Rack travel in m: 10.30...10.40 3rd pressure hPa : 75 Rack travel in m: 9.50...9.70 START CUT-OUT

1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 500
Speed rpm : 700
Del.quantity cm3/: 122.0...126.0
1000 s: (120.0...128.0)
Aneroid pressure h: Speed rpm : 1000
Del.quantity cm3/: 94.0...96.0
1000 s: (92.0...98.0)

BREAKAWAY
1st version

1st version 1mm rack travel less than full load rack tr: 9.70

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.90...5.10

Remarks:

H12

Speed

Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 0-60-120-180-240-300 Test sheet : MB 10,0 t Phasing Edition : 02.05.89 Tolerance + - ., .: 0.50 (0.75)Replaces : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 9 400 087 391 BASIC SETTING Injection pump rpm: 1000 Pump designation : PE6P110A720RS518 1st speed : 9 400 087 064 EP type number Rack travel in mm : 13.10...13.20 Governor Governor design. : RQ300/1000PA718-1 : 9 420 080 255 Del.quantity cm3/: 20.3...20.5 Governer no. 100 s: (20.1...20.8) Customer-spec. information Customer : DAIMLER-BENZ cm3 : 0.4Spread : OM 355 LA Engine 100 s: (0.7) : 250.0 1st version kW : 2000 rpm : 300.0 Rated speed 2nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.1...1.7 100 s: (0.9...1.8) TEST BENCH REQUIREMENTS cm3 : 0.4 100 s: (0.7) Test oil Spread inlet temp. _, C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 000 Control-lever position Degree: -2 rpm : 600 Inlet press., bar: 1.50 Speed Rack travel in mm : 19.20...20.80 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version Speed rpm : 1000 Aneroid pressure h: 1000 Del.quantity : 203.5...205.5 pressure, bar : 172...175 1000 : (201.0...208.0) : 1 680 750 004 Test lines cm3 : 4.00Spread 1000 : (7.50) Outside diameter x Wall thickness : 6.00x1.50x600 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: per values : 600 Speed rpm Rack travel in mm : 20.0 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 12.10 Speed rpm : 1045...1060 2nd rack travel in: 4.00 : 3.35...3.45 Prestroke mm : (3.30...3.50) Rack travel in mm : 9.00...12.00

rpm : 1110...1140

Speed

H13

4th rack travel in: 1220 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.5 Testing: Speed : 100 rom Minimum rack trave: 7.50 : 300 rpm Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 : 380...420 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1000 Pressure : 13.10...13.20 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.30...9.40 2nd pressure hPa : 610 Rack travel in m: 12.10...12.20 3rd pressure hPa : 290 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min : 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 600 Speed Del.quantity cm3/: 199.5...203.5 1000 s: (196.5...206.5) cm3 : 6.00Spread 1000 s: (9.00) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 118.0...120.0 1000 s: (115.0...123.0) Spread cm3 : 6.00

1000 s: (9.00)

1st version 1mm rack travel less than full load rack tr: 12.10 Speed rpm : 1045...1060 STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (116.0...244.0) Rack travel in mm : 15.50...16.50 Remarks:

: 100

BREAKAWAY

: 5.00...5.10 : (4.95...5.15) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : SCA 11,1 b1 Edition : 02.05.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + -., .: 0.50 (0.75) Combination no. : 9 400 087 393 Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A720RS7126 EP type number : 0 412 626 815 BASIC SETTING Governor Governor design. : RQV200...1000PA725-1 1st speed rpm: 700 Governer no. : 0 421 813 552 Rack travel in mm : 14.10...14.20 Customer-spec. information Del.quantity cm3/: 23.4...23.6 Customer : SAAB SCANIA Engine : DSC 11 - 18 100 s: (23.1...23.9) cm3 : 0.61st version kW : 265.0 Spread : 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 225.0 2nd speed Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 1.5...1.9 Test oil inlet temp. ., C . : 38...42 100 s: (-) Overflow valve cm3 : 0.3Spread : 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 225 travel mm : 1.20...1.60 Opening pressure, bar : 207...210 2nd speed rpm : 350 travel mm : 2.40...3.00 Orifice plate 3rd speed rpm : 650 travel mm : 4.40...5.00 diameter mm : 0,8 4th speed rpm : 1045 travel mm : 8.40...8.60 rpm : 1160 Test lines : 1 680 750 015 5th speed : 9.90...10.30 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X1.50X600 Control-lever position Degree: -1 Speed rpm : 1040 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version

rpm : 700

Aneroid pressure h: 900

Speed

Test pressure, bar: 25...27

Del.quantity : 234.0...236.0 1000 : (231.0...239.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 59...67 Testing: 1st rack travel in: 13.10 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 7...15 Testing: Speed : 100 rpm Minimum rack trave: 6.10 rpm : 225 Rack travel in mm : 4.50...4.70 Rack travel in mm : 2.00 rpm : 340...400 Speed Aneroid/Altitude Compensator Test 1st version Setting beea : 500 rpm hPa : 900 Pressure : 14.10...14.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.90 2nd pressure hPa : 575 Rack travel in m: 13.00...13.10 3rd pressure hPa : 405 Rack travel in m: 11.10...11.30 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/: 223.0...231.0
1000 s: (221.0...233.0)
Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...-325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 225
Rack travel in mm: 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

H16

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 10,0 e 3 Test sheet Edition : 02.05.89 Replaces : ISO-4113 Test oil Combination no. : 9 400 087 394 Injection pump Pump designation : PE5P110A720RS479 EP type number : 9 400 087 040 Governor Governor design: : RQ300/1050PA718-1 Governer no. : 9 420 080 187 Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M355-5 A 1st version kW : 170.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. .. C . : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test Lines : 1 680 750 004 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.35...3.45 : (3.30...3.50)

Rack travel in mm : 9.00...12.00

```
: 0-72-144-216-288
Phasing
Tolerance + - ... : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
1st speed
              rom: 1050
Rack travel in mm : 12.20...12.30
Del.quantity cm3/: 16.1...16.3
              100 s: (15.8...16.6)
             cm3 : 0.4
Spread
             100 s: (0.7)
             rpm : 300.0
2nd speed
Rack travel in mm: 6.4...6.6
Del.quantity cm3/: 1.1...1.6
              100 s: (-)
             cm3 : 0.4
100 s: (0.7)
Spread
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -3
             rpm : 600
Rack travel in mm : 19.20...20.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 1050
Speed
Aneroid pressure h: 700
                  : 161.0...163.0
Del.quantity
            1000 : (158.0...166.0)
Spread
            cm3 : 4.00
            1000 : (7.50)
RATED SPEED
1st version
Setting point:
                 : 600
Speed
           rom
Rack travel in mm : 20.0
Testing:
1st rack travel in: 11.20
Speed rpm: 1095...1110
2nd rack travel in: 4.00
            rpm : 1150...1180
  Speed
```

Firing order : 1-2-4-5-3

H17

Prestroke mm

4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rom Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 8.50 : 300 rpm Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 375...415 TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 12.20...12.30 2nd speed rpm : 600 Rack travel in m: 13.10...13.20 3rd speed rpm : 900 Rack travel in m: 12.70...13.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rom Pressure : 13.10...13.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 400 Rack travel in m: 12.40...12.50 3rd pressure hPa : 250 Rack travel in m: 11.10...11.30 START CUT-OUT 1/min: 230 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 rpm Del.quantity cm3/: 177.0...181.0 1000 s: (174.0...184.0) Aneroid pressure h: 700

: 900

rpm

Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 112.5...115.5 1000 s: (110.0...118.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (-) Rack travel in mm: 13.30...14.30

:

Remarks:

H18

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.95...4.05 : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 1-3-4- 2 Firing order : CAT 7,0 d 3 : 02.05.89 Test sheet Fdition Replaces : 0-90-180-270 Test oil : ISO-4113 Phasing : 9 400 087 395 Tolerance + - ... : 0.50 (0.75)Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES4P100A720LS504 : 9 400 087 052 BASIC SETTING EP type number Governor Governor design. : RQV350...1100PA798-3 1st speed rpm: 1100 : 9 420 080 227 Governer no. Rack travel in mm : 10.10...10.20 Customer-spec. information Del.quantity cm3/: 8.9...9.0 Customer : CATERPILLAR : 3304 DINA 100 s: (8.7...9.3) Engine cm3 : 0.3: 78.0 Spread 1st version kW : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Rack travel in mm : 6.8...7.0 Test oil Del.quantity cm3/ : 1.2...1.8 inlet temp. , C . : 38...42 100 s: (1.0...1.9) Overflow valve Spread cm3 : 0.3: 9 401 087 214 100 s: (0.5) (B) Setting of injection pump Inlet press., bar : 2.00 with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly : 1150 1st speed rpm : 8.50...8.60 Opening travel mm : 350 : 207...210 pressure, bar 2nd speed rom : 1.30...1.70 travel mm : 450 Orifice plate 3rd speed rpm : 3.20...3.50 travel mm diameter mm : 0,6 : 600 4th speed rpm : 4.40...4.70 travel mm rpm : 1000 Test lines : 1 680 750 008 5th speed : 7.00...7.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 Control-lever position x Length mm Degree: -1 rpm : 1150 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Speed

rpm : 1100

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

: 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 63...71 Testing: 1st rack travel in: 9.10 rpm : 1130...1140 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1320 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed : 100 rpm Minimum rack trave: 9.50 : 350 rpm Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 Speed : 460...520 rpm CONSTANT REGULATION rpm : 320...390 Speed START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 84.5...88.5 1000 s: (82.5...90.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.70

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

H20

Del.quantity cm3/: 165.0...185.0 1000 s: (161.0...189.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 5.10...5.30

Remarks:

: 3.95...4.05 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.90...4.10) Rack travel in mm : 9.00...12.00 Note remarks : 1-3-4-2 Firing order Test sheet : CAT 7,0 d 4 : 02.05.89 Edition Replaces Phasing : 0-90-180-270 Test oil : ISO-4113 : 9 400 087 397 Tolerance + - ., .: 0.50 (0.75)Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PES4P100A720LS504 : 9 400 087 052 BASIC SETTING EP type number Governor Governor design. : RQV350...950PA798-4 rpm: 950 1st speed : 9 420 080 228 Governer no. Rack travel in mm : 8.90...9.00 Customer-spec. information Del.quantity cm3/: 7.9...8.0 : CATERPILLAR Customer 100 s: (7.6...8.2) Engine : 3304 DINA cm3 : 0.31st version kW : 66.0 Spread : 1900 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 6.5...6.7 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. , C . : 38...42 100 s: (1.0...1.9) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 9 401 087 214 (B) Setting of injection pump Inlet press., bar: 2.00 with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 1050 1st speed : 8.50...8.60 travel mm Opening rpm : 350 : 207...210 pressure, bar 2nd speed : 1.30...1.70 travel mm rpm : 500 3rd speed Orifice plate : 3.30...3.60 rpm : 700 : 0,6 diameter mm travel mm 4th speed : 5.10...5.40 rpm : 900 travel mm Test lines : 1 680 750 008 5th speed travel mm : 6.80...7.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X2.00X600 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1050
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed rpm : 950

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Del.quantity : (9.0...82.5) : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testina: 1st rack travel in: 7.90 Speed rpm : 980...990 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed : 100 rpm Minimum rack trave: 8.50 Speed rpm: 350
Rack travel in mm: 5.10...5.30
Rack travel in mm: 2.00 rpm : 490...550 Speed CONSTANT REGULATION rpm : 320...390 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 8.90...9.00 rpm : 600 2nd speed Rack travel in m: 9.40...9.50 od speed rpm : 750 3rd speed Rack travel in m: 9.10...9.30 START CUT-OUT Speed 1/min : 290 (310) FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 75.5...79.5 1000 s: (73.5...81.5) rpm : 750 Speed Del.quantity cm3/: 77.0...81.0 1000 s: (75.0...83.0)

1st version 1mm rack travel less than

full load rack tr: 7.90 Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 165.0...185.0 1000 s: (161.0...189.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.10...5.30

Remarks:

:

BREAKAWAY

: 3.95...4.05 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order Test sheet : CAT 7,0 d 5 Edition : 02.05.89 Replaces : ISO-4113 : 0-90-180-270 Test oil Phasing : 9 400 087 398 Tolerance + - ... : 0.50 (0.75)Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PES4P100A720LS504 : 9 400 087 052 BASIC SETTING EP type number Governor rpm : 1000 Governor design. : RQV350...1000PA798-5 1st speed : 9 420 080 229 Governer no. Rack travel in mm : 8.70...8.80 Customer-spec. information Del.guantity cm3/ : 7.4...7.5 : CATERPILLAR Customer Engine : 3304 DINA 100 s: (7.1...7.7) 1st version kW : 66.0 cm3 : 0.3Spread : 2000 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.3 Test oil inlet temp. .. C : 38...42 Overflow valve 100 s: (0.5) : 9 401 087 214 (B) Setting of injection pump Inlet press., bar: 2.00 with governor Test nozzle holder assembly : 1 688 901 017 GUIDE SLEEVE TRAVEL rpm : 1050 1st speed : 8.50...8.60 travel mm Opening . : 350 : 207...210 rpm pressure, bar 2nd speed : 1.30...1.70 travel mm : 500 Orifice plate 3rd speed rpm : 3.30...3.60 diameter mm : 0,6 travel mm : 700 4th speed rpm : 5.10...5.40 travel mm 900 Test lines : 1 680 750 008 rpm 5th speed : 6.80...7.00 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 rpm : 1050 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values __

1st version

Speed

rpm : 1000

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Del.quantity : 74.0...75.0 1000 : (71.5...77.5) : 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 7.70

rpm : 1030...1040

2nd rack travel in: 4.00

Speed rpm : 1070...1100 4th rack travel in: 1200 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

: 100 Speed rpm Minimum rack trave: 8.50 Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

: 490...550 Speed rom

CONSTANT REGULATION

rpm : 320...390 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 8.70...8.80

2nd speed rpm : 500

Rack travel in m: 9.10...9.20

3rd speed rpm : 800

Rack travel in m: 8.90...9.10

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed rpm

Del.quantity cm3/: 60.5...64.5 1000 s: (58.5...66.5)

rpm : 800

Del.quantity cm3/: 72.0...76.0 1000 s: (70.0...78.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.70

Speed rbm : 1030...1040

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 165.0...185.0 1000 s: (161.0...189.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 350 Speed rpm

Rack travel in mm : 5.10...5.30

:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.95...4.05 Prestroke mm : (3.90...4.10) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : CAT 10,5 g5 Test sheet : 02.05.89 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 9 400 087 399 Tolerance + - . . . : 0.50 (0.75)Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6P100A720LS502 EP type number : 9 400 087 050 BASIC SETTING Governor Governor design. : RQV350...1100PA798-1 Governer no. : 9 420 080 222 1st speed rpm: 1100 Rack travel in mm : 9.60...9.70 Customer-spec. information Del.quantity cm3/: 10.3...10.4 Customer : CATERPILLAR 100 s: (10.1...10.7) : 3306 DIT Engine 1st version kW : 138.2 Rated speed : 2200 cm3 : 0.3Spread Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Rack travel in mm : 6.4...6.6 Test oil inlet temp. , C : 38...42 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...1.9) cm3 : 0.3 Overflow valve Spread : 9 401 087 214 100 s: (0.5) Inlet press., bar: 2.00 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 017 GUIDE SLEEVE TRAVEL rpm : 1150 1st speed : 8.50...8.60 rpm : 350 Opening travel mm pressure, bar : 207...210 2nd speed travel mm : 1.30...1.50 3rd speed rpm : 500 Orifice plate : 2.90...3.20 diameter mm : 0,6 travel mm 4th speed rpm : 700 travel mm : 4.50...4.80 rpm : 900 Test lines : 1 680 750 008 5th speed : 6.00...6.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 rpm : 1150 (A) Injection pump setting values Speed Insp. values in parentheses Set equal delivery quant. Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

rpm : 1100

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Del.quantity : 103.5...107.0) 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 8.60 rpm : 1130...1140 Speed 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1320 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 8...16 Testing: : 100 Speed rpm Minimum rack trave: 8.00 : 350 rpm Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 500...560 Speed rpm CONSTANT REGULATION rpm : 370...440 Speed START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 500 Del.quantity cm3/ : 105.5...109.5 1000 s: (103.5...111.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60 Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.90...5.10

Remarks:

:

: 3.95...4.05 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : CAT 10,5 g6 Test sheet : 02.05.89 Edition Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75): 9 400 087 400 Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6P100A720LS502 : 9 400 087 050 EP type number BASIC SETTING Governor Governor design. : RQV350...950PA798-2 rpm: 950 1st speed : 9 420 080 226 Governer no. Rack travel in mm : 8.60...8.70 Customer-spec. information Del.quantity cm3/: 8.7...8.8 : CATERPILLAR Customer Engine : 3306 DTT 100 s: (8.4...9.0) 1st version kW : 104.0 Spread cm3 : 0.3: 1900 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Test oil Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.2...1.8 inlet temp. , C : 38...42 100 s: (1.0...1.9) cm3 : 0.3Overflow valve Spread : 9 401 087 214 100 s: (0.5) Inlet press., bar: 2.00 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL rpm : 1055 1st speed : 8.50...8.60 Opening travel mm : 300 pressure, bar : 207...210 2nd speed rpm : 1.10...1.40 travel mm rpm : 500 : 3.40...3.70 rpm : 700 3rd speed Orifice plate diameter mm : 0,6 travel mm 4th speed : 5.20...5.50 travel mm Test lines : 1 680 750 008 rpm : 900 5th speed : 6.80...7.00 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness x Length mm : 6.00x2.00x600 Control-lever position Degree: -1 rpm : 1055 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values ____

1st version

Speed

rpm : 950

BEGINNING OF DELIVERY Test pressure, bar: 2...3

: 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 61...69 Testing: 1st rack travel in: 7.60 rpm : 980...990 Speed 2nd rack travel in: 4.00 rpm : 1025...1055 Speed 4th rack travel in: 1180 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 11...19 Testina: Speed : 100 rpm Minimum rack trave: 8.50 : 350 rpm Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 480...540 CONSTANT REGULATION rpm : 330...400 Speed TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 8.60...8.70 rpm : 600 2nd speed Rack travel in m: 9.30...9.40 3rd speed rpm : 800 Rack travel in m: 9.00...9.20 START CUT-OUT Speed 1/min : 290 (310) FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.60 Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.90...5.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 g 2 : 02.05.89 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 401

Injection pump

Pump designation : PES4P100A720LS501

: 9 400 087 051 EP type number

Governor

Governor design. : RQV350...1100PA798-1

: 9 420 080 222 Governer no.

Customer-spec. information

Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 107.4 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 9 401 087 214

Inlet press., bar: 2.00

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 2...3 Prestroke mm : 3.95...4.05 : (3.90...4.10)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasina : 0-90-180-270

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 12.4...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.2...6.4

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...1.9) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed

: 8.50...8.60 travel mm 2nd speed

: 350 : 1.30...1.50 rpm

travel mm

3rd speed rpm travel mm

: 500 : 2.90...3.20 : 700 4th speed rpm

: 4.50...4.80 travel mm

rpm : 900 5th speed

: 6.00...6.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 124.0...125.0 1000 : (121.5...127.5) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 63...71 Testing: 1st rack travel in: 9.40 Speed rpm : 1130...1140 2nd rack travel in: 4.00 Speed rpm : 1185...1215 4th rack travel in: 1320 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 8...16 Testina: rpm : 100 Speed Minimum rack trave: 8.00 Speed rpm : 350 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 500...560 Speed rpm CONSTANT REGULATION rpm : 370...440 Speed START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 9.40

STARTING FUEL DELIVERY

Speed

Speed

J02

rpm : 1130...1140

rpm : 100

Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.00...5.10

Remarks:

: 3.95...4.05 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : CAT 10,5 j1 Test sheet : 02.05.89 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 402 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 Injection pump Pump designation : PES6P100A720LS508 : 9 400 087 053 BASIC SETTING EP type number Governor Governor design. : RQV350...875PA798-6 1st speed rpm: 875 : 9 420 080 236 Governer no. Rack travel in mm : 8.80...8.90 Customer-spec. information Del.quantity cm3/ : 7.1...7.3 Customer : CATERPILLAR : 3306 DINA 100 s: (6.9...7.5) Engine 1st version kW : 87.2 Spread cm3 : 0.3Rated speed : 1750 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 6.7...6.9 Test oil inlet temp. , C : 38...42 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.6) cm3 : 0.3Overflow valve Spread : 9 401 087 348 100 s: (0.5) (B) Setting of injection pump Inlet press., bar: 2.00 with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 950 1st speed : 8.40...8.50 Opening | travel mm : 207...210 pressure, bar 2nd speed travel mm 3rd speed Orifice plate diameter mm : 0.6 travel mm 4th speed travel mm Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

rpm : 330 : 0.90...1.70 rpm : 450 : 3.20...3.60 rpm : 650 : 5.10...5.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 950 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 875 : 71.5...73.5 Speed

per values ____

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

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cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 61...69 Testina: 1st rack travel in: 7.80 rpm : 910...920 Speed 2nd rack travel in: 4.00 rpm : 950...980 Speed 4th rack travel in: 1050 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00 Speed rpm : 420...480 CONSTANT REGULATION rpm : 350...420 Speed TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 8.80...8.90 2nd speed rpm : 600 Rack travel in m: 9.50...8.60 rd speed rpm : 700 Rack travel in m: 9.20...9.40 3rd speed rpm : 750 4th speed Rack travel in m: 9.00...9.30 START CUT-OUT 1/min : 250 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version

: 600

1000 s: (7.00) : 750

1000 s: (68.5...76.5)

Speed rpm : 000
Det.quantity cm3/ : 70.0...74.0
1000 s: (68.0...76.0)
Spread cm3 : 5.00

man

rpm Del.quantity cm3/: 70.5...74.5

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.80 rpm : 910...920 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 165.0...185.0 1000 s: (161.0...189.0) Rack travel in mm : 14.00...15.00

LOW IDLE

: 350 man Speed Rack travel in mm : 5.10...5.30

Remarks:

J04

Speed

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CAT 10,5 i1 Test sheet Edition : 02.05.89 Replaces : ISO-4113 Test oil : 9 400 087 403 Combination no. Injection pump Pump designation : PES6P100A720LS511 EP type number : 9 400 087 059 Governor BASIC SETTING Governor design. : RQV350/840...900PA 839 1st speed : 9 420 080 233 Governer no. Customer-spec. information : CATERPILLAR Customer Engine : 3306 DIT 1st version kW : 190.0 Spread Rated speed : 1800 TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. ., C : 38...42 Overflow valve Spread : 9 401 087 348 Inlet press., bar: 2.00 Test nozzle holder : 1 688 901 017 assembly Opening | pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

```
Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-3-6-2-4
Phasing
                    : 0-60-120-180-240-300
Tolerance + + \dots : 0.50 (0.75)
Time to cyl. no. : 1
              rpm: 900
Rack travel in mm : 12.80...12.90
Del.quantity cm3/: 18.2...18.4
               100 s: (18.0...18.7)
            cm3 : 0.3
               100 s: (0.6)
               rpm : 350.0
Rack travel in mm: 6.4...6.6
Del.quantity cm3/: 1.2...1.8
               100 s: (0.9...2.0)
               cm3 : 0.3
100 s: (0.5)
(B) Setting of injection pump
    with governor
GUIDE SLEEVE TRAVEL
1st speed rpm : 950
                     : 8.50...8.60
  travel mm
2nd speed rpm : 350
travel mm : 0.50...1.50

3rd speed rpm : 500
    travel mm : 2.40...2.60

4th speed rpm : 750
    travel mm : 2.40...2.60
5th speed rpm : 850
                    : 4.00...4.50
 travel mm
GUIDE SLEEVE POSITION
Control-lever position
             Degree: -1
Speed rpm : 925
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
              rpm : 900
Speed
```

J05

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Del.quantity : 182.5...184.5 1000 : (180.0...187.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 57...65 Testing: 1st rack travel in: 11.80 Speed rpm : 910...920 2nd rack travel in: 4.00 rpm : 930...960 Speed 4th rack travel in: 1050 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 5...13 Testina: Speed rpm: 100 Minimum rack trave: 7.00 rpm : 350 Speed Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 Speed rpm : 770...830 START CUT-OUT 1/min : 290 (310) Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 910...920 Speed STARTING FUEL DELIVERY LOW IDLE : 350 rpm Rack travel in mm : 4.70...4.90 Remarks:

APPLICATION

Generator

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BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CAT 7,0 f 1 Edition : 02.05.89 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 404 Injection pump Pump designation : PES4P100A720LS510 EP type number : 9 400 087 058 Governor Governor design. : RQV350/840...900PA 839 Governer no. : 9 420 080 233 Customer-spec. information : CATERPILLAR Customer : 3304 DIT Engine 1st version kW : 135.0 : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. . C : 38...42 Overflow valve : 9 401 087 348 Inlet press., bar: 2.00 Test nozzle holder : 1 688 901 017 assembly Openina pressure, bar : 207...210 Orifice plate : 0,6 diameter mm Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ., .: 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 900 Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 20.3...20.5 100 s: (20.0...20.7) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 950 : 8.50...8.60 travel mm 2nd speed rpm: 350 travel mm : 0.50...1.50 3rd speed rpm : 500 : 2.40...2.60 travel mm 4th speed rpm : 750 travel mm : 2.40 : 2.40...2.60 5th speed rpm : 850 travel mm : 4.00 : 4.00...4.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 925 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900

Del.quantity 1000 : 203.0...205.0 : (200.5...207.5) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 12.90 rpm : 910...920 Speed 2nd rack travel in: 4.00 rpm : 940...970 Speed 4th rack travel in: 1050 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 5...13 Testing: Speed rpm : 100 Minimum rack trave: 7.00 rpm : 350 Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 rpm : 770...830 Speed START CUT-OUT 1/min: 290 (310) Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 910...920 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 195.0...215.0 1000 s: (191.0...219.0) Rack travel in mm : 14.00...15.00 LOW IDLE rpm Rack travel in mm : 4.70...4.90 Remarks:

APPLICATION Generator

: 3.95...4.05 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.90...4.10) Note remarks Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order Test sheet : CAT 7,0 g 3 : 02.05.89 Edition Replaces Test oil : ISO-4113 Phasing : 0-90-180-270 Combination no. : 9 400 087 405 Tolerance $+ - \frac{1}{2} : 0.50 (0.75)$ Time to cyl. no. : 1 Injection pump Pump designation : PES4P100A720LS501 EP type number : 9 400 087 051 BASIC SETTING Governor Governor design. : RQV350...1100PA828 1st speed rpm: 1100 : 9 420 080 232 Governer no. Rack travel in mm : 10.80...10.90 Customer-spec. information Del.quantity cm3/: 13.0...13.2 Customer : CATERPILLAR 100 s: (12.8...13.4) Engine : 3304 DIT 1st version kW : 103.0 cm3 : 0.3Spread : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0Test oil Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.4...2.0 inlet temp. , C : 38...42 100 s: (1.2...2.1) cm3 : 0.3 Overflow valve Spread : 9 401 087 348 100 s: (0.5) (B) Setting of injection pump Inlet press., bar: 2.00 with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 1150 1st speed Opening | travel mm : 8.50...8.60 : 350 pressure, bar : 207...210 2nd speed rpm : 1.30...1.50 travel mm rpm : 500 : 2.90...3.20 rpm : 700 Orifice plate 3rd speed : 0,6 diameter mm travel mm 4th speed : 4.50...4.80 travel mm rpm : 900 Test lines : 1 680 750 008 5th speed : 6.00...6.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X2.00X600 x Length mm Control-lever position Degree: -1 rpm : 1150 (A) Injection pump setting values Speed Insp. values in parentheses Set equal delivery quant. Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP per values ___ BEGINNING OF DELIVERY 1st version

Speed

rpm : 1100

Aneroid pressure h: 600

Test pressure, bar: 2...3

Del.quantity : 130.0...132.0 1000 : (128.0...134.0) : 3.50 cm3 Spread 1000 : (6.00)RATED SPEED 1st version Control Lever position degrees: 61...69 Testina: 1st rack travel in: 9.80 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1240 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 8.00 rpm : 350 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 530...590 Speed CONSTANT REGULATION rpm : 370...440 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : 600 Rack travel mm : 10.80...10.90 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 310 Rack travel in m: 10.40...10.50 3rd pressure hPa : 210 Rack travel in m: 9.30...9.50 START CUT-OUT 1/min : 290 (310) Speed

1st version Aneroid pressure h: 600 : 700 Speed rpm Del.quantity cm3/: 123.0...127.0 1000 s: (121.0...129.0) cm3 : 5.00Spread 1000 s: (7.00) Aneroid pressure h: -Speed rpm : 1100 Del.quantity_cm3/ : 90.0...92.0 1000 s: (88.0...94.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm: 19.00...21.00 LOW IDLE

Speed rpm Rack travel in mm : 5.10...5.30

Remarks:

J10

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CAT 10,5 g5 Test sheet Edition : 02.05.89 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 406 Injection pump Pump designation : PES6P100A720LS502 EP type number : 9 400 087 050 Governor Governor design. : RQV350...1100PA828 : 9 420 080 232 Governer no. Customer-spec. information Customer : CATERPILLAR Engine : 3306 DITA 1st version kW : 191.5 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 9 401 087 348 Inlet press., bar: 2.00 Test nozzle holder : 1 688 901 017 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 2...3

: 3.95...4.05 : (3.90...4.10) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 14.7...14.9

100 s: (14.4...15.1)

cm3 : 0.3Spread

100 s: (0.6)

rom : 350.0 2nd speed Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 1.2...1.8 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed : 8.50...8.60 travel mm

rpm : 350 2nd speed : 1.30...1.50 travel mm

rpm : 500 3rd speed

: 2.90...3.20 rpm : 700 travel mm

4th speed

: 4.50...4.80 travel mm

rpm : 900 5th speed

travel mm : 6.00...6.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 500

Del.quantity : 74(.0...14)... 1000 : (144.5...151.5) : 3.50 cm3 Spread 1000 RATED SPEED 1st version Control lever position degrees: 63...71 Testina: 1st rack travel in: 11.40 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testina: rpm : 100 Speed Minimum rack trave: 8.00 rpm : 350 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 : 530...590 Speed rpm CONSTANT REGULATION rpm : 370...440Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 500 Pressure : 12.40...12.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.90...10.00 2nd pressure hPa : 300 Rack travel in m: 11.70...11.80 3rd pressure hPa : 200 Rack travel in m: 10.70...10.90

1st version Aneroid pressure h: 500 Speed rpm : 700 Del.quantity cm3/ : 149.0...153.0 1000 s: (147.0...155.0) cm3 : 5.00Spread 1000 s: (7.00) Aneroid pressure h: -Speed rpm : 1100 Del.quantity cm3/: 108.0...110.0 1000 s: (105.5...112.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0)

1000 s: (153.0...181.0)
Rack travel in mm : 19.00...21.00

LOM TOFF

Speed rpm : 350 Rack travel in mm : 5.00...5.20

Remarks:

:

Speed

START CUT-OUT

1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 10,5 g8 Edition : 02.05.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 407

Injection pump

Pump designation : PES6P100A720LS502 EP type number : 9 400 087 050

Governor

Governor design. : RQV350...1100PA828-1

Governer no. : 9 420 080 235

Customer-spec. information

Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 174.5 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 9 401 087 348

Inlet press., bar: 2.00

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05 : (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \frac{1}{4} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.50

3rd speed rpm : 500

travel mm : 2.90...3.20

4th speed rpm : 700

travel mm : 4.50...4.80

5th speed rpm : 900

travel mm : 6.00...6.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 600

Del.quantity : 153.0...155.0 1000 : (151.0...157.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 62...70 Testina: 1st rack travel in: 11.90 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1250...1280 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testina: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 350 Speed Rack travel in mm : 4,90...5.10 Rack travel in mm : 2.00 : 500...560 Speed rpm CONSTANT REGULATION rpm : 370...440 Speed Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom Pressure hPa : 600 : 12.90...13.00 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.90...10.00 2nd pressure hPa : 340 Rack travel in m: 12.00...12.10

1st version Aneroid pressure h: 600 Speed rpm : 700 Del.quantity cm3/ : 159.0...163.0 1000 s: (157.0...165.0) Spread cm3 : 5.001000 s: (7.00) Aneroid pressure h: -Speed rpm : 1100 Del.quantity cm3/ : 108.0...110.0 1000 s: (105.5...112.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 4.90...5.10 Remarks:

START CUT-OUT

Speed 1/min: 290 (310)

Rack travel in m: 10.60...10.80

3rd pressure hPa : 200

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 10,0 s5 Test sheet : 02.05.89 Edition Replaces : ISO-4113 Test oil Combination no. : 9 400 087 409 Injection pump Pump designation : PE6P12OA32ORS3186 EP type number : 0 411 826 756 Governor Governor design. : RQV250...1025PA657-: 9 420 080 264 Governer no. Customer-spec. information : VOLVO Customer Engine : TD102FS : 250.0 : 2050 1st version kW Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.60...2.70 Prestroke mm : (2.55...2.75) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 700 Rack travel in mm : 12.10...12.20 Del.guantity cm3/: 21.0...21.2 100 s: (20.7...21.5) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/: 1.6...2.1 100 s: (1.3...2.3) cm3 : 0.5 Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.10...1.30 travel mm rpm : 500 2nd speed : 4.10...4.90 travel mm rpm : 700 3rd speed : 6.30...6.70 travel mm rpm : 900 4th speed travel mm : 6.30...6.70 rpm : 1025 5th speed : 7.30...7.80

GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1080

travel mm

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 700 Speed

Aneroid pressure h: 1000 : 210.0...212.0 Del.quantity 1000 : (207.0...215.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 59...67 Testing: 1st rack travel in: 11.10 rpm : 1055...1065 Speed 2nd rack travel in: 4.00 Speed rpm : 1120...1150 4th rack travel in: 1250 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 4...12 Testing: Speed rpm : 100 Minimum rack trave: 5.40 Speed rpm : 250 Rack travel in mm : 3.90...4.10 CONSTANT REGULATION rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

Setting Speed rpm : 500 hPa : 1000 Pressure : 12.10...12.20 Rack travel mm

Measurement

1st version

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 130

Rack travel in m: 9.10...9.20

3rd pressure hPa : 530

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10 rpm : 1055...1065 Speed

LOW IDLE

: 250 Speed rpm Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 16.0...21.0 1000 s: (13.5...23.5) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAT 7,0 g 4 Edition : 02.05.89

Replaces

Test oil : ISO-4113

: 9 400 087 411 Combination no.

Injection pump

Pump designation : PES4P100A720LS501 EP type number : 9 400 087 051

Governor

Governor design. : RQV350...1100PA828-3

: 9 420 080 266 Governer no.

Customer-spec. information

Customer : CATERPILLAR

: 3304 DIT. Engine

1st version kW : 103.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 7 401 087 348

Inlet press., bar: 2.00

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

: 3.95...4.05 Prestroke mm : (3.90...4.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2 Firing order

Phasing : 0-90-180-270

Tolerance + - ., . : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 12.9...13.1

100 s: (12.7...13.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed

: 8.50...8.60 travel mm

rpm : 350 2nd speed

: 1.30...1.50 travel mm

3rd speed

rpm : 500 : 2.90...3.20 travel mm

rpm : 700 4th speed

: 4.50...4.80 travel mm

rpm : 900 5th speed

: 6.00...6.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Aneroid pressure h: 500

Del.quantity : 129.0...131.0 1000 : (127.0...133.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 10.10 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...17 Testing: : 100 Speed rpm Minimum rack trave: 8.00 rpm : 350 Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 530...590 Speed CONSTANT REGULATION Speed rpm : 370...440 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 500 mm : 11.10...11.20 Pressure Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.00...8.20 2nd pressure hPa : 290 Rack travel in m: 10.20...10.30

1st version Aneroid pressure h: 500 Speed rpm: 700
Del.quantity cm3/: 128.0...132.0
1000 s: (126.0...134.0) Aneroid pressure h: Speed rpm : 1100 Del.quantity cm3/: 81.0...83.0 1000 s: (79.0...85.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Remarks:

Speed

3rd pressure hPa : 125

START CUT-OUT

Rack travel in m: 8.80...9.00

FUEL DELIVERY CHARACTERISTICS

1/min : 290 (310)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 10,0 f 2 Test sheet Edition Toplaces : 02.05.89 : ISO-4113 Test oil Combination no. : 9 400 087 413 Injection pump Pump designation : PE5P100A720RS491 EP type number : 9 400 087 044 Governor Governor design. : RQ300/1100PA269-1 Governer no. : 0 421 801 237 Customer-spec. information : DAIMLER-BENZ Customer : OM 355-5 Engine 1st version kW : 150.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. ., C . : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-2-4-5-3 : 0-72-144-216-288 Phasing Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1 BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.1...8.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.5)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 600 Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 125.0...127.0 1000 : (123.0...129.0) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.70

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350

rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.1 Testing: Speed rpm: 100 Minimum rack trave: 9.70 Speed rpm: 300
Rack travel in mm: 8.00...8.20
Rack travel in mm: 2.00
Speed rpm: 375...415 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 117.0...121.0 1000 s: (114.5...123.5) cm3 : 5.00 Spread 1000 s: (7.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1145...1160 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CAS 8,3 k 5 : 16.6.89 Test sheet Edition : 6.7.88 Replaces Test oil : ISO-4113

: 9 400 230 005 Combination no.

Injection pump

Pump designation : PES6A95D42OLS2551

Governor

Governor design. : RSV375...1050A2B2034

Customer-spec. information : CASE Customer

Engine : A-504 BD

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: WS 187P

Inlet press., bar: 1.50

Test nozzle holder

: 9 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 9 681 230 705

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.20...2.30 Rack travel in mm: 13.35 Firing order

Phasing : 0-60-120-180-240-300 Tolerance + - ., : 0.50(0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm: 13.35

Del.quantity cm3/: 11.3...11.5

100 s: (-)

cm3 : 0.3Spread

100 s: (-)

2nd speed rpm : 375 Rack travel in mm : 8.10

Del.quantity cm3/: 1.6...2.2 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 113.0...115.0 Del.quantity 1000 : (111.0...117.0)

: 3.0 cm3 Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testina:

1st rack travel in: 12.25

Speed rpm : 1090...1100 2nd rack travel in: 6.90

Speed rpm : 1170...1200
3rd rack travel in: 2.00
Speed rpm : 1205...1235

LOW IDLE 1

Control lever

position degrees: 27...35

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 8.15

Testina: Speed rpm : 150
Minimum rack trave: 19.00
Speed rpm : 375
Rack travel in 50.40 Rack travel in mm : 8.10...8.20 Rack travel in mm : 3.00 : 530...570 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 425 Rack travel in m: 14.50...14.60 START CUT-OUT 1/min: 190 Speed FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 113.0...117.0 1000 s: (111.0...119.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.25 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (-) HIGH IDLE 1st version Speed rpm : 1185 Rack travel in mm : 6.80...7.00 LOW IDLE Speed rpm : 375 Del.quantity cm3/ : 16.0...22.0 1000 s: (-)

Remarks:

: CASE NO. A-151333

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: DEE 7,6 c 4 : 07.04.89 Test sheet Edition : 15.6.88 Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 045

Injection pump

Pump designation : PES6A95D41ORS2522-1

: 9 410 230 017 EP type number

Governor

Governor design. : RSV425...1100A2C2161

: 9 420 234 140 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6466T Engine

1st version kW : 106.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 1.85...1.95 Prestroke mm

: (1.80...2.00)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 425.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 500

: 86.5...88.5 Del.quantity

1000 1000 : (84.0...90.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.00

rpm : 1145...1155 Speed

2nd rack travel in: 4.00 rpm : 1185...1195 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 21...29 Setting point w/out bumper spring man : 425 Rack travel in mm: 5.1 Testing: rpm : 100 Speed Minimum rack trave: 19.00 : 425 rpm Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 : 590...650 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 9.00...9.10 2nd speed rpm : 650 Rack travel in m: 10.40...10.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : : 10.20...10.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 100 Rack travel in m: 10.30...10.40 2nd pressure hPa : 149 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 500 : 650 Speed rpm Del.quantity cm3/: 100.5...105.5 1000 s: (98.5...108.0)

1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 155.0...175.0 1000 s: (150.0...180.0) Rack travel in mm : 19.00...21.00 HIGH IDLE 1st version : 1180 Speed rpm Rack travel in mm : 5.30...5.50 LOW IDLE Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 7.50 Spread cm3 : 3.501000 s: (5.50) Remarks: : JOHN DEERE # RE23750 Setting without torque-control spring retainer with 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 9,0 mm control-rod travel. Start-of-delivery mark 16, cam angle after start of delivery cyl. 1

BREAKAWAY

Speed

Aneroid pressure h:

Del.quantity cm3/:-

rpm : 500

1000 s: (87.0...95.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 j 1 Edition : 07.04.89 Replaces : 14.1.88

: ISO-4113 Test oil

: 9 400 230 046 Combination no.

Injection pump

Pump designation : PES6A95D41ORS2561 : 9 410 230 006 EP type number

Governor

: RSV600...1100A2C2048 Governor design.

-1L

: 9 420 234 157 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6466T Engine

1st version kW : 110.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 413 385 007

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 1.85...1.95 Prestroke mm

: (1.80...2.00)

Rack travel in mm : 10.50 Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - ., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 600.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 91.U...95.0)

1000 : (89.0...95.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 8.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed : 1195...1225 rpm 4th rack travel in: 1300 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

rpm : 600 Rack travel in mm : 4.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 600 rpm

Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00

: 710...770 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 9.90...10.00

2nd speed rpm : 950

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 950 Speed

Del.quantity cm3/: 104.0...108.0

1000 s: (101.5...110.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

: 1145...1155 Speed rpm

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 155.0...175.0

1000 s: (150.0...180.0) Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 4.70...4.90

LOW IDLE

: 600 Speed rpm

J26

Rack travel in mm : 5.00...5.20 Del.quantity cm3/ : 12.0...16.0

1000 s: (9.5...18.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: JOHN DEERE # RE10472

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 10.5, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h Edition : 07.04.89 : 15.6.88 Replaces : ISO-4113 Test oil

Combination no. : 9 400 230 067

Injection pump

Pump designation : PES6A100D410RS2676 : 9 410 230 023 EP type number

Governor

: RSV425...1100A2C2161 Governor design.

-2L

: 9 420 234 100 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6466A Engine

1st version kW : 141.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55

: (2.40...2.60)

Rack travel in mm : 10.50 : 1-5-3-6-2-4

Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 425.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 2.4...2.8

100 s: (2.1...3.0)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 500
Del.quantity : 111.0...113.0

Del.quantity : 777.0...15.0)
1000 : (109.0...115.0)
1000 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.20

Speed rpm : 1145...1155

127

2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 425 Rack travel in mm : 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 425 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 600...660 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.20...10.30 2nd speed rpm : 750 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -: 9.35...9.55 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.00...11.10 2nd pressure hPa : 80 Rack travel in m: 9.70...10.10 3rd pressure hPa : 500 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 500 rpm : 750

Del.quantity cm3/: 127.5...130.5 1000 s: (125.0...133.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: -1000 s: (85.0...93.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0) Rack travel in mm: 19.40

HIGH IDLE

1st version

: 1190 Speed man Rack travel in mm : 5.70...5.90

LOW IDLE

rpm : 425 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 24.0...28.0 1000 s: (21.5...30.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: JOHN DEERE # RE16418

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 15.5, after start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks : CUM 8,3 a11 Test sheet Firing order : 02.05.89 Edition : 1.9.88 Replaces Test oil : ISO-4113 Phasing : 9 400 230 089 Combination no. Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor : RSV400...1100A0c2190 Governor design. -3R1st speed : 9 420 234 125 Governer no. Customer-spec. information Customer : C.D.C. Engine : 6 C 8.3 : 112.0 1st version kW Spread : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 : 1 680 750 014 Test lines Speed Outside diameter x Wall thickness Spread : 6.00x2.00x600 x Lenath mm

Time to cyl. no. : 1 BASIC SETTING rpm: 1100 Rack travel in mm : 10.60...10.70 Del.guantity cm3/: 9.5...9.7 100 s: (9.3...9.9) cm3 : 0.3100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version : 1100 rpm : 95.5...97.5 Del.quantity 1000 : (93.5...99.5) cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 41...49 Testina:

: 2.80...2.90

: 1-5-3-6-2-4

: 0-60-120-180-240-300

K01

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Insp. values in parentheses Set equal delivery quant.

1st rack travel in: 9.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring : 400 rpm Rack travel in mm : 5.4 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 445...505 Speed rpm BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed : 400 rpm Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: : C.D.C # 3911953 Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a20 Edition : 02.05.89

Replaces

Test oil : ISO-4113

: 9 400 230 089CA Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

: 3911954 Cust. part no.

Customer-spec. information : C.D.C. Customer

Engine : 6 C 8.3

1st version kW : 126.8 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press. bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K03

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 96.5...98.5 Del.quantity 1000 : (94.5...100.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 9.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1200...1230 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 27...35 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 500...560 Speed rpm TORQUE CONTROL 2nd speed rpm : 750

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.70...10.80 Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version : 750 Speed rpm Del.quantity cm3/: 119.5...123.5 1000 s: (117.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

K₀4

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm Less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 a21 Test sheet : 02.05.89 Edition

Replaces

Test oil : ISO-4113

: 9 400 230 089CB Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

Governor design. : RSV400...1250A0C2190

Cust. part no. : 3911958

Customer-spec. information Customer : C.D.C.

Engine : 6 CT 8.3 Ltr

1st version kW : 160.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 121.0...123.0 1000 : (119.0...125.0) cm3 : 3.50 1000 : (6.00)

Spread

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

K05

1st rack travel in: 11.00 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1355...1385 Speed 3rd rack travel in: 4.00 Speed rpm : 1360...1390 4th rack travel in: 1450 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 495...555 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00

K06

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a22 Test sheet Edition : 02.05.89

Replaces

: ISO-4113 Test oil

: 9 400 230 089CC Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design: : RSV400...1100A0C2190

Cust. part no. : 3911962

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3ltr Engine

1st version kW : 174.5 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 2.80...2.90

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

Prestroke mm

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 126.5...128.5 : (124.5...130.5) Del.quantity 1000

cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 39...47

Testina:

K07

1st rack travel in: 11.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 Speed rpm : 1205...1235 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rom : 455...515 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a23 Test sheet : 02.05.89 Edition Replaces Test oil : ISO-4113 : 9 400 230 089CD Combination no. Injection pump Pump designation : PES6A100D320/3RS2691 : 9 410 230 025 EP type number Governor Governor design. : RSV400...1000A0C2190 Cust. part no. : 3908566 Customer-spec. information Customer : C.D.C. : 6 CTA 8.3 Engine : 171.0 1st version kW Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ., . : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 13.1...13.3

100 s: (12.9...13.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 131.0...133.0 Del.quantity 1000 : (129.0...135.0) : 3.50

cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 12.20 rpm : 1050...1060 Speed 2nd rack travel in: 4.00 : 1130...1160 Speed rom 3rd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1150 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm: 400 Rack travel in mm: 5.1 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 : 460...520 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1050...1060 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 14.0...18.0 1000 s: (11.5...20.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a24 Test sheet Edition : 02.05.89

Replaces

Test oil : ISO-4113

: 9 400 230 089CE Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Cust. part no. : 3911959

Customer-spec. information Customer : C.D.C.

Engine : 6 CTA 8.3 Ltr.

: 157.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-30-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 111.0...113.0 Del.quantity 1000 : (109.0...115.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

K11

1st rack travel in: 11.00 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 460...520 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 13.30...13.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

K12

Note remarks

: CUM 8,3 a25 Test sheet Edition : 02.05.89

Replaces

Test oil : ISO-4113

: 9 400 230 089CF Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Cust. part no. : 3911543

Customer-spec. information Customer : C.D.C.

: 6 CT. 8.3 ltr. Engine

: 138.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 106.5...108.5 Del.quantity 1000 : (104.5...110.5)

cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.40 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1

Control lever position degrees: 27...35 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.5

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.40...11.50 2nd speed rpm : 750 Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 400 Rack travel in mm: 5.80...6.00 Del.guantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks : 1-5- 3- 6- 2- 4 Firing order : CUM 8,3 a26 Test sheet Edition : 02.05.89 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 089CG Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 BASIC SETTING Governor Governor design. : RSV400...1000A0c2190 rpm: 1000 1st speed Rack travel in mm : 11.10...11.20 Customer-spec. information Customer : C.D.C. Del.guantity cm3/: 10.0...10.2 : 6 C 8.3 Engine 100 s: (9.8...10.4) : 127.0 1st version kW Rated speed : 2000 cm3 : 0.3 Spread TEST BENCH REQUIREMENTS 100 s: (0.6) rpm : 400.0Test oil 2nd speed Rack travel in mm : 5.8...6.0 inlet temp. , C . : 38...42 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Overflow valve : 1 417 413 047 Spread 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 017 assembly Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Orifice plate Click setting x : ? diameter mm : 0.6 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 014 1st version : 1000 Speed rpm : 100.0...102.0 Del.quantity Outside diameter 1000 : (98.0...104.0) x Wall thickness x Length mm : 6.00x2.00x600 : 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.10

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1080...1110

4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 21...29

Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.4

Testina:

rpm : 100 Speed Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

: 450...510 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 11.10...11.20

rpm : 750 2nd speed

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 111.5...115.5 1000 s: (109.5...117.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a27 Test sheet Edition : 02.05.89 Replaces : ISO-4113 Test oil Combination no. : 9 400 230 089CH Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0c2190 Customer-spec. information : C.D.C. Customer : 6 0 8.3 Engine 1st version kW : 131.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. . C . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 107.5...105.5)
1000 : (99.5...105.5)
Soread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

1st rack travel in: 10.10

rpm : 1090...1100 Speed 2nd rack travel in: 4.00

rpm : 1145...1175 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 26...34 Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 480...540 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1050
Rack travel in m: 11.10...11.20

rpm : 750 2nd speed

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rom

Del.quantity cm3/: 119.5...123.5 1000 s: (117.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 14.0...18.0

1000 s: (11.5...20.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a28 Test sheet : 02.05.89 Edition Replaces : ISO-4113 Test oil : 9 400 230 089CI Combination no. Injection pump Pump designation: PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design: : RSV500...1050A0c2190 Customer-spec. information Customer : C.D.C. Engine : 6 C 8.3 : 123.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. . C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina : 207...210 pressure, bar Orifice plate : 0,6 diameter mm Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 500.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 96.5...98.5 1000 : (94.5...100.5)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testina:

1st rack travel in: 9.70

Speed rpm : 1095...1105 2nd rack travel in: 4.00

rpm : 1155...1225 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 35...44

Setting point w/out bumper spring

rpm : 500 Rack travel in mm : 5.1

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 500

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 10.70...10.80 d speed rpm : 750

2nd speed

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rom : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a29 Test sheet Edition : 02.05.89 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 089CJ Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0C2190 Customer-spec. information Customer : C.D.C. Engine : 6 C 8.3 : 131.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening

pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - . . : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 10.1...10.3 100 s: (9.9...10.5) Spread cm3 : 0.3100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed : 1050 rpm : 101.5...103.5 Del quantity 1000 : (99.5...105.5) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED

1st version Control lever

position degrees: 44...52

Testing: 1st rack travel in: 10.10

Speed : 1090...1100 rpm 2nd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 26...34

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

: 480...540 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.10...11.20

rpm : 750 2nd speed

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 119.5...123.5 100G s: (117.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CUM 8,3 a30 Edition : 02.05.89

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 089CK

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1250A0C2190

Customer-spec. information Customer : C.D.C.

Engine : 6 CT 8.3 ltr

: 160.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \frac{1}{2}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.00...12.10

Del.guantity cm3/ : 12.1...12.3

100 a: (11.9...12.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 721.0....25.0)

3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1355...1385 Speed 3rd rack travel in: 4.00 Speed rpm : 1360...1390 4th rack travel in: 1450 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring : 400 rpm Rack travel in mm : 5.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 495...555 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rom Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks: Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Speed

Rack travel in mm : 5.80...6.00

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks : 1-5-3-6-2-4 Firing order : CUM 8,3 a31 : 02.05.89 Test sheet Edition Replaces : 0-60-120-180-240-300 Test oil : ISO~4113 Phasina Tolerance $+ - \dots : 0.50 (0.75)$ Combination no. : 9 400 230 089CL Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 BASIC SETTING Governor Governor design. : RSV500...1050A0C2190 1st speed Customer-spec. information Customer : C.D.C. Engine : 6 C 8.3 : 123.0 1st version kW Rated speed : 2100 Spread TEST BENCH REQUIREMENTS Test oil 2nd speed inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Spread Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate Click setting x : ? : 0,6 diameter mm : 1 680 750 014 Test lines 1st version Speed Outside diameter Del.quantity x Wall thickness

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

rpm : 1050 Rack travel in mm : 10.70...10.80 Del.guantity cm3/: 9.6...9.8 100 s: (9.4...10.0) cm3 : 0.3100 s: (0.6) rpm : 500.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3100 s: (0.5) Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1050 : 96.5...98.5 1000 : (94.5...100.5) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 53...61 Testing:

1st rack travel in: 9.70

x Length mm

rpm : 1095...1105 Speed 2nd rack travel in: 4.00

rpm : 1155...1225 Speed 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 35...44

Setting point w/out bumper spring

: 500 rpm Rack travel in mm : 5.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 500
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

: 590...650 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

1st speed

t speed rpm : 1050 Rack travel in m: 10.70...10.80

2nd speed rpm : 750

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

bsea2 rpm : 500

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 a32 Test sheet

Edition : 02.05.89

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 0890M

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Customer-spec. information : C.D.C. Customer

: 6 0 8.3 Engine

: 133.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. _, C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.30...11.40

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 101.0...103.0 Del.quantity 1000 : (99.0...105.0)

: 3.50 cm3

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testina:

1st rack travel in: 10.30

rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1210...1240 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 30...38 Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.1

Testing: rpm : 100 Speed Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.30...11.40 2nd speed rpm : 750 Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/ : 116.5...120.5 1000 s: (114.5...122.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400

Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 12.0...16.0 1000 s: (9.5...18.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control socina retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks : 1-5-3-6-2-4 Firing order : CUM 8,3 a33 Test sheet Edition : 02.05.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + - ... : 0.50 (0.75)Combination no. : 9 400 230 089CN Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D320/3RS2691 : 9 410 230 025 EP type number BASIC SETTING Governor Governor design. : RSV400...1050A0C2190 Governer no. : 9 420 234 1st speed rpm: 1050 Rack travel in mm : 12.90...13.00 Customer-spec. information Del.quantity cm3/: 12.9...13.1 Customer : C.D.C. : 6 0 8.3 Engine 100 s: (12.7...13.3) : 174.0 : 2100 cm3 : 0.31st version kW Spread Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.02nd speed Test oil Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0 inlet temp. ., C : 38...42 100 s: (1.3...2.2) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 1 417 413 047 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 017 rpm : 800 assembly Rack travel in mm : 0.30...0.70 Opening Governor spring pre-tension : 207...210 pressure, bar Click setting x : ? Orifice plate diameter mm FULL LOAD DELIV. AT FULL LOAD STOP : 0,6 1st version Test lines : 1 680 750 014 rpm : 1050 Speed : 129.0...131.0 Del.quantity 1000 : (127.0...133.0) cm3 : 3.50 Outside diameter x Wall thickness Spread : 6.00x2.00x600 1000 : (6.00) x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant.

1st version Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.90

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

rpm : 1095...1105 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

: 400 rpm Rack travel in mm : 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00

rpm : 440...500 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 10.50 Note remarks Firing order : 1-5-3-6-2-4 : CUM 8,3 a34 Test sheet Edition : 02.05.89 Replaces : 0-60-120-180-240-300 : ISO-4113 Test oil Phasina Combination no. : 9 400 230 08900 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 BASIC SETTING Governor Governor design. : RSV400...1100A0C2190 1st speed rpm : 1100 Rack travel in mm : 10.70...10.80 Customer-spec. information Customer : C.D.C. Del.quantity cm3/: 9.6...9.8 : 6 C 8.3 Engine 100 s: (9.4...10.0) : 126.8 : 2200 1st version kW cm3 : 0.3Rated speed Spread TEST BENCH REQUIREMENTS 100 s: (0.6) rpm : 400.0 Test oil 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) inlet temp. . C : 38...42 Overflow valve cm3 : 0.3 : 1 417 413 047 Spread 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 017 assembly Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening : 207...210 pressure, bar Governor spring pre-tension Orifice plate Click setting x : ? diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 014 1st version rpm : 1100 Speed : 96.5...98.5 Outside diameter Del.quantity 1000 : (94.5...100.5) x Wall thickness : 6.00X2.00X600 cm3 : 3.50 x Length mm Spread 1000 : (6.00) (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. RATED SPEED

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 9.70

per values

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

rpm : 1140...1150 Speed 2nd rack travel in: 4.00 : 1200...1230 Speed rpm 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 27...35 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.4 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 500...560 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 10.70...10.80 d speed rpm : 750 2nd speed Rack travel in m: 12.30...12.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

L04

before stop.

Adjust stop lever to 0.5...1.0 mm

Start-of-delivery mark 11, cam angle

ofter start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet

: CUM 8,3 a35

Edition

: 02.05.89

Replaces

Test oil

: ISO-4113

Combination no. : 9 400 230 089CP

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number

: 9 410 230 025

Governor

Governor design. : RSV400...1000A0C2190

Customer-spec. information Customer

: C.D.C.

Engine

: 6 CTA 8.3

1st version kW Rated speed

: 171.0 : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 017

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)
Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 13.1...13.3

100 s: (12.9...13.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.5...5.7

Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 008: mar Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 131.0...133.0 Del.quantity

1000 : (129.0...135.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 12.20

: 1050...1060 Speed rpm 2nd rack travel in: 4.00 : 1130...1160 Speed rpm 3rd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.1 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 460...520 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1050...1060 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.50...5.70

Del.quantity cm3/ : 14.0...18.0

1000 s: (11.5...20.5)

Spread cm3 : 3.50

1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a36

Edition : 02.05.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 089cq

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Customer-spec. information

Customer

: C.D.C.

Engine

: 6 CTA 8.3 Ltr.

: 157.0 1st version kW

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.96 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 117.0...115.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.00

rpm : 1140...1150 Speed 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1300 Speed

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.5

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

rpm : 460...520 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.00...12.10

rpm : 750 2nd speed

Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 a37 : 02.05.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 089CR

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0c2190

Customer-spec. information Customer : C.D.C.

: 6 CT. 8.3 ltr. Engine

: 138.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C . : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 106.5...108.5 : (104.5...110.5) Del.quantity 1000

: 3.50

Spread cm3 1000 : (6,00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.40

109

: 1140...1150 Speed rpm

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 27...35

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.5

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.00
Speed rpm: 520...580

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.40...11.50

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

rpm_ : 750 Speed

Del.quantity cm3/: 125.0...129.0

1000 s: (123.0...131.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CUM 8,3 a38 : 02.05.89 Edition

Replaces

: ISO-4113 Test oil

: 9 400 230 089CS Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1000A0C2190

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

1st version kW : 127.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 100.0...102.0 Del.quantity

1000 : (98.0...104.0) cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 38...46

1st rack travel in: 10.10

rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 21...29

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 450...510 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 11.10...11.20

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 111.5...115.5 1000 s: (109.5...117.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 a39 Test sheet : 02.05.89 Edition

Replaces

Test oil : TSO-4113

: 9 400 230 089CT Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1250A0C2190

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 ltr Engine

1st version kW : 160.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + -, .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 121.0...123.0 1000 : (119.0...125.0) Spread cm3. : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testina:

1st rack travel in: 11.00 Speed rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1355...1385 Speed

3rd rack travel in: 4.00 rpm : 1360...1390 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testina: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.00
Speed rpm: 495...555 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 122.0...126.0 1000 s: (120.0...128.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1290...1300 Speed STARTING FUEL DELIVERY LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

L14

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a40 : 02.05.89 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 0890U

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV500...1050A0C2190

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

: 123.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C . : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 96.5...98.5 Del.quantity 1000 : (94.5...100.5) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 9.70

rpm : 1095...1105

2nd rack travel in: 4.00

Speed rpm : 1155...1225

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 35...44

Setting point w/out bumper spring

rpm : 500 Rack travel in mm : 5.1

Testing:

: 100 Speed rom Minimum rack trave: 19.00 rpm : 500

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00

rpm : 590...650 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1050
Rack travel in m: 10.70...10.80
ad speed rpm : 750

rpm : 750 2nd speed

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

: 1095...1105 Speed rpm

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 500 Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a41 : 26.6.89 Test sheet Edition : ISO-4113 Test oil Combination no. : 9 400 230 090 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1100A2C2190 -5R : 9 420 234 126 Governer no. Customer-spec. information Customer : C.D.C. Engine : 60 830 1st version kW : 112 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.30 Test nozzle holder : 1 688 901 016 assembly Openina . pressure, bar : 207...210 Orifice plate : 0.5 diameter mm Test lines : 9 680 271 029 Outside diameter x Wall thickness x Length mm : 6,00x2,00x600 (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

```
: (2.85...3.05)
Rack travel in mm : 10.50
Firing order : 1-5-2-6-3-4
Phasing : 0-60-120-180-240-300 Tolerance + -, : 0.50 (0.75)
Time to cyl. no. : 1
BASIC SETTING
1st speed rpm: 1100
Rack travel in mm : 11.40...11.50
Del.quantity cm3/: 9.4...9.6
             100 s: (9.2...9.8)
             cm3 : 0.3
Spread
             100 s: (0.6)
             rpm : 425
2nd speed
Rack travel in mm : 6.00...6.20
Del.quantity cm3/: 1.7...2.1
100 s: (1.4...2.3)
             cm3 : 0.35
Spread
             100 s: (0.55)
GUIDE SLEEVE POSITION
Control-lever position
           Degree: -3 rpm : 800
Speed
Rack travel in mm : 0.30...0.70
Governor spring pre-tension
Click setting x : ?
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 1100
Speed
              : 94.0...96.0
Del.quantity
            1000 : (92.0...98.0)
cm3 : 3.0
Spread
            1000 : (6.0)
RATED SPEED
1st version
Control lever
position degrees: 41...49
Testing:
1st rack travel in: 10.40
```

Prestroke mm

: 2.90...3.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1185...1215

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00

rpm : 450...510 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0 1000 s: (130)

Rack travel in mm : 19.00...21.00

Remarks:

: C.D.C. # 390 6535

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

L18

Note remarks

: CUM 8,3 a42 Test sheet : 26.6.89

Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 091

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV425...1100A2C2190

-4R

Governer no. : 9 420 234 127

Customer-spec. information : C.D.C. Customer

: 6 CT-830 Engine

1st version kW : 126 Rated speed : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.30

Test nozzle holder

assembly : 1 688 901 016

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

Test lines : 9 680 271 029

Outside diameter

x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

L19

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300 Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.35Spread

100 s: (0.6)

2nd speed rpm : 425

Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.35Spread

100 s: (0.55)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Del.quantity : 85.5...87.5
1000 : (83.5...89.5)
Spread cm3 : 3.5

1000 : (6.0)

RATED SPEED

1st version

Control Lever

position degrees: 43...51

Testing:

1st rack travel in: 10.00

rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 3rd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 425 Speed Rack travel in mm : 5.6 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 425 Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 : 495...555 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 950
Rack travel in m: 11.50...11.70
3rd speed rpm : 750
Pack travel in m: 12.60 12.00 Rack travel in m: 12.60...12.80 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 105.0...109.0 1000 s: (103.0...111.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0 1000 s: (130)

Rack travel in mm : 19.00...21.00

Remarks:

: C.D.C. # 390 6545

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a43 Test sheet

Edition : 26.6.89

Replaces

Test oil : ISO-4113

: 9 400 230 094 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A2C2190

: 9 420 234 132 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6c-830

1st version kW : 109.7 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.30

Test nozzle holder

: 1 688 901 016 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,5 diameter mm

Test lines : 9 680 271 029

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

L21

Prestroke mm : 2.90...3.00 : (2.85...3.05)

Rack travel in mm : 10.50 : 1-5-2-6-3-4

Phasing : 0-60-120-180-240-300 Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

cm3 : 0.35Spread

100 s: (0.6)

rpm : 400 2nd speed

Rack travel in mm : 5.70...5.90
Del.quantity cm3/: 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.35

100 s: (0.55)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 95.5...7(...)

1000 : (93.5...99.5)

Soread cm3 : 3.5

1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160 3rd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1200

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00

rpm : 445...505 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135.0 1000 s: (130)

Rack travel in mm : 19.00...21.00

Remarks:

: C.D.C. # 390 6538

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 j Edition Replaces : 07.04.89 : 1.9.88 Test oil : ISO-4113

Combination no. : 9 400 230 096

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV425...900A4C2213-

1R

Governer no. : 9 420 234 136

Customer-spec, information Customer : C.D.C.

: 6 CT 8.3 Engine

1st version kW : 154.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

L23

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 830

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 830 : 135.0...137.0 1000 : (133.0...139.0) cm3 : 3.50 Del.quantity

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...48

Testing:

1st rack travel in: 12.40 rpm : 925...935 Speed 2nd rack travel in: 4.00 Speed rpm : 960...990 4th rack travel in: 1030 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm : 425 Rack travel in mm : 5.0 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 425 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 435...495 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 925...935 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 425 Remarks: : C.D.C # 3908844 Adjust stop lever to 0.5...1.0 mm

Start-of-delivery mark at 10, cam rotation angle after start of delivery,

Generator

before stop.

cylinder 1

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a12 Edition : 07.04.89 Replaces : 1.9.88 Test oil : ISO-4113 Combination no. : 9 400 230 097 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor : RSV400...1100A0c2190 Governor design. -8R : 9 420 234 137 Governer no. Customer-spec. information Customer : C.D.C. : 6 CT 8.3 Engine : 156.6 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values

per values

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + -, .: 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 12.2...12.4 100 s: (12.0...12.6) Spread cm3 : 0.3100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 : 122.5...124.5 Del.quantity 1000 : (120.5...126.5) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 40...48 Testing:

1st rack travel in: 11.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1185...1215 Speed 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: ? Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.2 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 445...505 Speed rom **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.60...5.80

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50 1000 s: (5.50) Remarks: : C.D.C. # 3911952 Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark at 10, cam rotation angle after start of delivery,

cylinder 1

Note remarks

Test sheet : CUM 8,3 a59 Edition : 02.05.89

Replaces

: ISO-4113 Test oil

: 9 400 230 097BA Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1000A0C2190

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

: 151.4 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp., C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nazzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + -., .: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

1000 : (117.0...123.0) cm3 : 3.50 Del.quantity

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 34...42

Testing:

1st rack travel in. 11.10

rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 3rd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.2 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 430...490 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks Firing order : 1-5-3-6-2-4 : CUM 8,3 a44 Test sheet Edition : 02.05.89 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 9 400 230 097BB Tolerance + - ... : 0.50 (0.75)Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 BASIC SETTING Governor Governor design. : RSV400...1050A0C2190 1st speed rpm: 1050 Rack travel in mm : 12.40...12.50 Customer-spec. information Customer : C.D.C. Del.guantity cm3/: 12.2...12.4 : 6 C 8.3 Engine 100 s: (12.0...12.6) : 148.0 : 2100 1st version kW cm3 : 0.3Rated speed Spread 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.0 Test oil 2nd speed Rack travel in mm : 5.3...5.5 inlet temp. , C : 38...42 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) Overflow valve cm3 : 0.3: 1 417 413 047 Spread 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 017 assembly Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening | pressure, bar : 207...210 Governor spring pre-tension Click setting x : ?Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 014 1st version Speed rpm : 1050 . 122.0...124.0 1000 : (120.0...126.0) Outside diameter Del.quantity x Wall thickness cm3 : 3.50 1000 : (6.00) : 6.00X2.00X600 x Length mm Spread

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.40

M01

Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1135...1165 Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 rpm : 430...490 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.40...12.50

2nd speed rpm : 750

Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm

Del.quantity cm3/: 141.0...145.0

1000 s: (139.0...147.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

: 1090...1100 Speed rom

STARTING FUEL DELIVERY

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 14.0...18.0 1000 s: (11.5...20.5)

M02

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a45 Test sheet : 02.05.89 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 230 097BC Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1100A0C2190 Customer-spec. information Customer : C.D.C. : 6 CT 8.3 Engine 1st version kW : 156.6 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp.., C . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,6 : 1 680 750 014 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values

> Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: (2.75...2.95) Rack travel in mm : 10.50 : 1-5- 3- 6- 2- 4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 12.30...12.40 Del.guantity cm3/: 12.2...12.4 100 s: (12.0...12.6) cm3 : 0.3Spread 100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed 1000 : (120.5...124.5) cm3 : 3.50 Del.quantity Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 11.30

: 2.80...2.90

Prestroke mm

Speed rpm : 1145...1155 2nd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 28...36 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 485...545 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet

: CUM 8,3 a46

Edition Replaces : 02.05.89

Test oil

: ISO-4113

Combination no.

: 9 400 230 097BD

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number

Governor

: 9 410 230 025

Governor design. : RSV400...1000A0C2190

Customer-spec. information

Customer

: C.D.C.

Engine

: 6 CT 8.3

1st version kW

Rated speed

: 151.4 : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 017

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1000

: 119.0...121.0 Del.quantity

1000 : (117.0...123.0)

cm3

: 3.50

Spread

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.10

M₀5

rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Speed rpm: 1075...1105 3rd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1150 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm : 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 430...490 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

M₀6

Note remarks

Test sheet : CUM 8,3 a47 Edition : 02.05.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 097BE

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050A0C2190

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

: 148.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050 Speed

Del.quantity : 122.0...124.0 1000 : (120.0...126.0) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.40

MO7

: 1090...1100 Speed rpm 2nd rack travel in: 4.00 : 1135...1165 Speed rom 4th rack travel in: 1250 : 0.30...1.40 Speed rpm LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 4.9

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400

Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 12.40...12.50 2nd speed rpm : 750

Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm

Speed rpm : 750 Del.quantity cm3/ : 141.0...145.0 1000 s: (139.0...147.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 14.0...18.0 1000 s: (11.5...20.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks: Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

80M

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a13 : 07.04.89 Test sheet Edition : 1.9.88 Replaces : ISO-4113 Test oil Combination no. : 9 400 230 099 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0C2190 -10R : 9 420 234 142 Governer no. Customer-spec. information Customer : C.D.C. : 6 C 8.3 Engine 1st version kW : 89.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly **Opening** pressure, bar : 207...210 Orifice plate : 0.6 diameter mm Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 9.60...9.70 Del.guantity cm3/: 8.2...8.4 100 s: (8.0...8.6) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 400.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Del.quantity : 82.0...84.0 1000 : (80.0...86.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 41...49 Testing:

: 2.80...2.90

Prestroke mm

MO9

1st rack travel in: 8.60 rpm : 1095...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1125...1155 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.2 Testing: rpm Speed : 100 Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 : 460...520 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 9.60...9.70 2nd speed rpm : 750 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 86.5...90.5 1000 s: (84.5...92.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.60 rpm : 1095...1105 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE

rpm : 400

Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

Speed

M10

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm
before stop.

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Note remarks : CUM 8,3 a49 Firing order : 1-5-3-6-2-4 Test sheet : 02.05.89 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 9 400 230 099AB Combination no. Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6A100D320/3RS2691 Time to cyl. no. : 1 : 9 410 230 025 EP type number BASIC SETTING Governor Governor design. : RSV400...1000A0C2190 rpm : 1000 1st speed Cust. part no. : 3911951 Rack travel in mm : 10.80...10.90 Customer-spec. information Del.quantity cm3/: 9.8...10.0 Customer : C.D.C. : 6 C 8.3 100 s: (9.6...10.2) Engine 1st version kW : 105.9 cm3 : 0.3Spread : 2000 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 Test oil inlet temp. , C : 38...42 100 s: (1.3...2.2) cm3 : 0.3 Overflow valve Spread 100 s: (0.5) : 1 417 413 047 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -3 rpm : 800 : 1 688 901 017 assembly Rack travel in mm : 0.30...0.70 Opening : 207...210 pressure, bar Governor spring pre-tension Click setting x : ? Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP diameter mm : 0,6 1st version Test lines : 1 680 750 014 rpm : 1000 Speed : 98.5...100.5 Del.quantity 1000 : (96.5...102.5) Outside diameter x Wall thickness : 3.50 Spread cm3 1000 : (6.00) : 6.00x2.00x600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 36...44 BEGINNING OF DELIVERY Test pressure, bar: 27...29 Testing:

M11

1st rack travel in: 9.80 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 3rd rack travel in: 4.00 rpm : 1090...1120 Speed 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.4 Testina: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 455...515 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet Edition : CUM 8,3 a50 : 02.05.89

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 230 099AC

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1250A0C2190

Cust. part no. : 3911947

Customer-spec. information : C.D.C. Customer

: 6 C 8.3 Engine

: 119.3 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M13

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 106.0...108.0 1000 : (104.0...110.0)

Spread

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.30 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1355...1385 4th rack travel in: 1450 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 27...35 Setting point w/out bumper spring Speed rpm: 400 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 Speed rpm : 485...545 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.30 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a51 Test sheet Edition : 02.05.89

Replaces

: ISO-4113 Test oil

Injection pump

Combination no.

Pump designation : PES6A100D320/3RS2691

: 9 400 230 099AD

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Cust. part no. : 3911959

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

1st version kW : 98.4 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. . C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M15

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 88.0...90.0 Del.quantity 1000 : (86.0...92.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...54

Testing:

1st rack travel in: 9.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 3rd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.4 Testing: Speed rpm Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed : 485...545 rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 10.00...10.10 2nd speed rpm : 800 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 92.0...96.0 1000 s: (90.0...98.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

rpm Rack travel in mm : 5.80...6.00

: 400

LOW IDLE

M16

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) : 3.50 Spread cm3 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : CUM 8,3 a52 Test sheet : 02.05.89 Edition Replaces : ISO-4113 Test oil Combination no. : 9 400 230 099AE Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0c2190 Cust. part no. : 3911950 Customer-spec. information Customer : C.D.C. Engine : 6 C 8.3 1st version kW : 109.6 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 11.40...11.50 Del.quantity cm3/: 10.8...11.0 100 s: (10.6...11.2) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed , : 108.5...110.5 1000 : (106.5...112.5) Del.quantity : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 41...49 Testing:

M17

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 10.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1140...1170 3rd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.4 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 470...530 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a53 Test sheet : 02.05.89 Edition Replaces : ISO-4113 Test oil Combination no. : 9 400 230 099AF Injection pump Pump designation : PES6A100b320/3RS2691 : 9 410 230 025 EP type number Governor Governor design. : RSV400...1100A0C2190 Cust. part no. : 3915955 Customer-spec. information : C.D.C. Customer : 6 C 8.3 Engine 1st version kW : 111.9 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina | pressure, bar : 207...210 Orifice plate : 0,6 diameter mm Test lines : 1 680 750 014 Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 1 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 105.5...107.5 Del.quantity 1000 : (103.5...109.5)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testina:

M19

1st rack travel in: 10.30 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1225

3rd rack travel in: 4.00

Speed rpm : 1205...1235

4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 475...535 Speed rom **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.30 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE : 400 Speed rpm Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

M20

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a54 Test sheet Edition : 02.05.89 Replaces : ISO-4113 Test oil Combination no. : 9 400 230 099AG Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1000A0C2190 Cust. part no. : 3915958 Customer-spec. information Customer : C.D.C. : 6 C 8.3 Engine 1st version kW : 105.9 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 : 1 680 750 014 Test lines Outside diameter x Wall thickness

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) cm3 : 0.3Spread 100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rom : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed : 98.5...100.5 Del.quantity 1000 : (96.5...102.5) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 36...44 Testing:

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Tolerance + -., : 0.50 (0.75)

rpm : 1000

Phasing

BASIC SETTING

1st speed

Time to cyl. no. : 1

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300

M21

x Length mm

1st rack travel in: 9.80 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 3rd rack travel in: 4.00 Speed rpm : 1090...1120 4th rack travel in: 1200 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm: 400 Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.00 rpm : 455...515 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1040...1050 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 beed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle

after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Note remarks Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 : CUM 8,3 a55 : 02.05.89 Test sheet Edition Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 9 400 230 099AH Tolerance + - ... : 0.50 (0.75)Injection pump Pump designation : PES6A1000320/3RS2691 Time to cyl. no. : 1 : 9 410 230 025 EP type number BASIC SETTING Governor Governor design. : RSV400...1250A0C2190 1st speed rpm : 1250 Cust. part no. : 3915954 Rack travel in mm : 11.30...11.40 Customer-spec. information Del.quantity cm3/: 10.6...10.8 Customer : C.D.C. : 6 C 8.3 100 s: (10.4...11.0) Engine : 119.3 1st version kW cm3 : 0.3Spread Rated speed : 2500 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.02nd speed Rack travel in mm : 5.6...5.8 Test oil Del.quantity cm3/: 1.6...2.0 inlet temp. , C : 38...42 100 s: (1.3...2.2) cm3 : 0.3Overflow valve Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Degree: -3 Test nozzle holder : 1 688 901 017 rpm : 800 assembly Rack travel in mm : 0.30...0.70 Opening Governor spring pre-tension pressure, bar : 207...210 Click setting x : ? Orifice plate diameter mm : 0,6 1st version Test lines : 1 680 750 014 Speed Del.quantity Outside diameter x Wall thickness cm3 Spread : 6.00X2.00X600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever

FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1250 : 106.0...108.0 1000 : (104.0...110.0) cm3 : 3.50 1000 : (6.00) position degrees: 51...59 Testing:

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 10.30

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1355...1385 Speed

4th rack travel in: 1450

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 27...35

Setting point w/out bumper spring

Speed rpm: 400 Rack travel in mm : 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00

: 485...545 Speed rpm

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50

:

Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 a56 Test sheet Edition : 02.05.89

Replaces

: ISO-4113

Test oil

: 9 400 230 099AI Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Cust. part no. : 3915956

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

: 98.4 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

M₂5

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firina order

Phasina : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity

: 88.0...90.0 1000 : (86.0...92.0) cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 45...54

Testina:

1st rack travel in: 9.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 3rd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.4 Testina: : 100 Speed rom Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 485...545 TORQUE CONTROL rpm : 1100 1st speed 2nd speed rpm : 800

Torque control curve - 1st version Rack travel in m: 10.00...10.10 Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version Speed : 800 rpm Del.quantity cm3/: 92.0...96.0 1000 s: (90.0...98.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm Rack travel in mm : 5.80...6.00

M26

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 a57 Test sheet Edition : 02.05.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 099AJ

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050A0C2190

Cust. part no. : 3915957

Customer-spec, information Customer : C.D.C.

: 6 C 8.3 Engine

: 109.6 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Rack travel in mm : 10.50

Prestroke mm

: (2.75...2.95)

: 2.80...2.90

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.8...11.0

155 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050 : 108.5...110.5 Del.quantity : 108.5...10.5 1000 : (106.5...112.5) Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

M27

1st rack travel in: 10.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 3rd rack travel in: 4.00 Speed rpm : 1150...1180 4th rack travel in: 1200 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 470...530 Speed rom **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a58 : 26.6.89 Test sheet Edition Replaces : ISO-4113 Test oil Combination no. : 9 400 230 101 Injection pump Pump designation : PES6A1000320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV425...1250A2C2190 -12R : 9 420 234 144 Governer no. Customer-spec. information Customer : C.D.C. : 6 CT 8.3 Engine 1st version kW : 160.3 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. .. C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.30 Test nozzle holder : 1 688 901 016 assembly Opening : 207...210 pressure, bar Orifice plate : 0,5 diameter mm Test lines : 1 681 271 029 Outside diameter x Wall thickness : 6,00X2,00X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

: (2.75...2.95)
Rack travel in mm : 10.50 Firing order : 1-5-2-6-3-4 Phasing : 0-60-120-180-240-300 Tolerance + -, : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 12.20...12.30 Del.guantity cm3/: 10.6...10.8 100 s: (10.4...11.0) cm3 : 0.35 Spread 100 s: (0.6) 2nd speed rpm : 425
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 1.8...2.2
100 s: (1.5...2.4) cm3 : 0.2 Spread 100 s: (0.3) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed Del.quantity : 106.5...108.5 1000 : (104.5...110.5) Spread cm3 : 3.5 1000 : (6.0) RATED SPEED 1st version Control lever position degrees: 47...53 Testing: 1st rack travel in: 11.20

: 2.80...2.90

Prestroke mm

Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1350...1380 3rd rack travel in: 4.00 Speed rpm : 1360...1390 4th rack travel in: 1450 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 425 Rack travel in mm : 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 425 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 480...540 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed 2nd speed Rack travel in m: 12.55...12.75 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 108.5...112.5 1000 s: (106.5...114.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0 1000 s: (130) Rack travel in mm : 19.00...21.00 Remarks: : C.D.C. # 390 7180

Adjust stop lever to 0.5...1.0 mm

before stop.

N₀2

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 Note remarks Firing order : 1-5-3-6-2-4 : CUM 8,3 b 7 Test sheet : 02.05.89 Edition : 20.12.88 Replaces : ISO-4113 : 0-60-120-180-240-300 Phasing Test oil Combination no. : 9 400 230 103 Tolerance + - ... : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PES6A1000410RS2691-2 EP type number : 9 410 230 028 BASIC SETTING Governor Governor design. : RQV350...1100AB1227R 1st speed rpm : 1100 Governer no. : 9 420 231 015 Rack travel in mm : 12.60...12.70 Customer-spec. information Del.quantity cm3/: 12.6...12.8 Customer : C.D.C. : 6 CT 8.3 100 s: (12.4...13.0) Engine cm3 : 0.4: 156.6 Spread 1st version kW Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 5.6...5.8 Test oil inlet temp. , C : 38...42 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.6Overflow valve Spread : 1 417 413 047 100 s: (0.8) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 1100 ist speed : 7.70...7.70 **Opening** travel mm pressure, bar : 207...210 rpm : 1150 2nd speed travel mm : 8.00...8.60 rpm : 1290 Orifice plate 3rd speed : 9.50...10.10 : 0,6 diameter mm travel mm rpm : 350 : 1.20...1.60 4th speed travel mm rpm : 600 Test lines : 1 680 750 014 5th speed : 3.90...4.50 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 rpm : 1290 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 6.70...9.30 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values ____ BEGINNING OF DELIVERY 1st version Test pressure, bar: 27...29 Speed rpm : 1100 Aneroid pressure h: 900

Del.quantity : 126.5...128.5 1000 : (124.5...130.5)

cm3 : 4.00Spread 1000 : (6.50)

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testing:

1st rack travel in: 11.60

rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1260...1290 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...17
Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00

Speed rpm : 440...500

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed man hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.70

2nd pressure hPa : 405

Rack travel in m: 10.90...11.00 3rd pressure hPa : 535 Rack travel in m: 11.80...12.20

START CUT-OUT

1/min: 260 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 85.0...89.0 1000 s: (83.0...91.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 165.0...185.0 1000 s: (160.0...190.0) Rack travel in mm : 15.30...15.70

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 18.0...22.0 1000 s: (15.5...24.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3912645

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark is at 7, after start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 k 1 Test sheet Edition : 07.04.89 : 15.6.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 106 Injection pump Pump designation : PES6A100D320/3RS2691 : 9 410 230 025 EP type number Governor : RSV400...1050A0C2216 Governor design. -1R : 9 420 234 154 Governer no. Customer-spec. information Customer : C.D.C. : 6 CT 8.3 Engine 1st version kW : 141.7 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. _, C . . : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening (pressure, bar : 207...210 Orifice plate : 0.6 diameter mm : 1 680 750 014 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ... : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 11.90...12.00 Del.guantity cm3/: 11.5...11.7 100 s: (11.3...11.9) cm3 : 0.3Spread 100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed : 115.0...117.0 Del.quantity 1000 (113.0...119.0) : 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing: 1st rack travel in: 10.90 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1145...1175 Speed 4th rack travel in: 1200

: 0.30...1.40 Speed rpm

LOW IDLE 1 Control Lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00 : 470...530 Speed man

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 11.90...12.00

2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm

Del.quantity cm3/: 134.0...138.0 1000 s: (132.0...140.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0

1000 s: (132.0...158.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 5.80...6.00
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3: 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911540

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

Edition

: DEE 7,6 h14 : 26.6.89

Replaces Test oil

: ISO-4113

Combination no. : 9 400 230 108

Injection pump

Pump designation : PES6A100D410RS2676-1

EP type number

: 9 410 230 024

Governor

Governor design. : RSV450...1050A2C2204

Governer no.

: 9 420 234 163

Customer-spec. information

Customer

: JOHN DEERE

Engine

: 6466 AT

1st version kW

Rated speed

: 120 : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 9 681 271 001 Test lines

Outside diameter

x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.45...2.55

: (2.40...2.60)

NO7

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300

Phasing : 0-60-120-180 Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1050

Rack travel in mm : 10.00...10.10

Del.guantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

Spread

cm3 : 0.35

100 s: (0.6)

rpm : 450 2nd speed

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.35 Spread

100 s: (0.55)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050

Del.quantity

: 104.0...106.0 1000 : (102.0...108.0)

Spread

cm3 : 3.5 1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.00

Speed rpm : 1095...1105

2nd rack travel in: 4.00

rpm : 1155...1165 Speed

3rd rack travel in: 4.00

Speed rpm : 1160...1180 4th rack travel in: 1250 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

Speed rpm : 450 Rack travel in mm : 4.9 rpm : 450 Speed

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 rpm : 590...650 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 109.0...113.0 1000 s: (107.0...115.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170.0 1000 s: (165.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

: 1150 Speed rpm

Rack travel in mm : 4.60...5.00

Remarks:

: JOHN DEERE # RE29233

Screw in torque-control-spring retainer to make contact at 650 l/min.

80N

Start-of-delivery mark at control-rod travel 10.5 mm and 15, after start of delivery.

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Note remarks Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 Test sheet : CUM 8,3 a60 : 02.05.89 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 9 400 230 109 Tolerance + - ., . : 0.50 (0.75)Injection pump Pump designation : PES6A100D320/3RS2691 Time to cyl. no. : 1 : 9 410 230 030 EP type number BASIC SETTING Governor Governor design. : RSV450...1100A0C2190 -41R 1st speed rpm: 1100 : 0 420 233 247 Governer no. Rack travel in mm : 10.20...10.30 Customer-spec. information Del.quantity cm3/: 8.9...9.1 Customer : C.D.C. 100 s: (8.7...9.3) Engine : 6CT830 1st version kW : 117.1 Spread cm3 : 0.3Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 450.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0 Test oil inlet temp. ., C : 38...42 100 s: (1.3...2.2) Overflow valve cm3 : 0.3Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 017 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x : ? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1100 Del.quantity : 89.0...93.0)
1000 : (87.0...93.0)
1000 : 3.50 Outside diameter x Wall thickness 1000 : (6.00) : 6.00X2.00X600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version Control lever per values position degrees: 47...55 BEGINNING OF DELIVERY Test pressure, bar: 27...29 Testing:

N₀9

1st rack travel in: 9.20 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 3rd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 29...37 Setting point w/out bumper spring : 450 rpm Rack travel in mm : 5.3 Testina: Speed : 100 man Minimum rack trave: 19.00 : 450 rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 525...585 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 10.20...10.30 2nd speed rpm : 750 Rack travel in m: 10.80...11.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 90.5...94.5 1000 s: (88.5...96.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00

: 450

rpm Rack travel in mm : 5.70...5.90

LOW IDLE

N10

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: : C.D.C. # 3915683 Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 a61 Test sheet Edition : 02.05.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number

: 9 410 230 030

Governor

: RSV450...1100A0C2190 Governor design.

-42R

: 0 420 233 248 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CT830 Engine

: 150.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

N11

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Phasina

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.10...12.20

Del.guantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.02nd speed

Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

: 0.3 Spread cm3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 118.5...120.5 : (116.5...122.5) : 3.50 Del.quantity 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 11.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm: 1195...1225 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

: 450 Speed rpm

Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00

: 500...560 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.10...12.20 2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 133.0...137.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

: 1140...1150 Speed rom

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450

Rack travel in mm : 5.70...5.90

N12

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3915685

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Test pressure, bar: 27...29 BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Note remarks Prestroke mm Rack travel in mm : 10.50 Test sheet : CUM 8,3 a62 : 02.05.89 : 1-5-3-6-2-4 **Fdition** Firing order Replaces : ISO-4113 Test oil Combination no. : 9 400 230 111 Phasing : 0-60-120-180-240-300 Phasing Tolerance $+ - \frac{1}{4}$: 0.50 (0.75) Injection pump Pump designation : PES6A100D320/3RS2691 Time to cyl. no. : 1 : 9 410 230 030 EP type number BASIC SETTING Governor Governor design. : RSV450...1100A0c2190 -40R 1st speed rpm: 1100 : 0 420 233 246 Governer no. Rack travel in mm : 11.20...11.30 Customer-spec. information Del.quantity cm3/: 10.1...10.3 Customer : C.D.C. : 6CT830 100 s: (9.9...10.5) Engine : 134.2 cm3 : 0.31st version kW Spread : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 450.02nd speed Rack travel in mm : 5.7...5.9 Test oil Del.quantity cm3/: 1.6...2.0 inlet temp. ., C : 38...42 100 s: (1.3...2.2) Overflow valve cm3 : 0.3Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Degree: -3 Test nozzle holder rpm : 800 : 1 688 901 017 assembly Speed Rack travel in mm : 0.30...0.70 Openina : 207...210 pressure, bar Governor spring pre-tension Click setting x : ? Orifice plate FULL LOAD DELIV. AT FULL LOAD STOP diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

N13

rpm : 1100 Speed

: 101.0...103.0 Del.quantity 1000 : (99.0...105.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

1st version Control lever

position degrees: 49...57

Testing: 1st rack travel in: 10.20 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1240 3rd rack travel in: 4.00 Speed rpm : 1215...1245 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 31...39 Setting point w/out bumper spring rpm : 450 Speed Rack travel in mm : 5.3 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 450 rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 rpm : 535...595 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.20...11.30 2nd speed rpm : 750 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/: 110.5...114.5 1000 s: (108.5...116.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 450

N14

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: C.D.C. # 3915684

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11, cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a10 : 02.05.89 Edition : 14.1.88 Replaces : ISO-4113 Test oil Combination no. : 9 400 230 115 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1250A0C2190 -24R : 9 420 234 178 Governer no. Customer-spec. information Customer : C.D.C. : 6 CTA 8.3 Engine 1st version kW : 131.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014

Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 27...29

N15

: 2.80...2.90 : (2.75...2.95) Prestroke mm Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ., . : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 10.90...11.00 Del.quantity cm3/: 9.9...10.1 100 s: (9.7...10.3) Spread cm3 : 0.3100 s: (0.6. 2nd speed rpm : 400.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.2...1.6
100 s: (0.9...1.8) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1250 . 99.0...101.0 1000 : (97.0...103.0) cm3 : 3.50 Del.quantity Spread 1000 : (6.00)

RATED SPEED 1st version Control lever position degrees: 51...59 Testina:

1st rack travel in: 9.90 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1360...1390 4th rack travel in: 1450 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 4.9 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 Speed rpm : 470...530 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 400 Speed rpm Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50) Remarks: : C.D.C. # 3915981

Adjust stop lever to 0.5...1.0 mm before stop.

Start—of—delivery mark 11, cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a 9 : 02.05.89 Test sheet Edition : 1.9.88 : ISO-4113 Replaces Test oil Combination no. : 9 400 230 116 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025 Governor : RSV400...1050A0c2190 Governor design. : 9 420 234 182 Governer no. Customer-spec. information : C.D.C Customer Engine : 6 CT 8.3 1st version kW : 154.4 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

x Length mm

N17

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4: 0-60-120-180-240-300 Phasing Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 12.2...12.4 100 s: (12.0...12.6) cm3 : 0.4Spread 100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.6Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed : 122.5...124.5 Del.quantity 1000 : (120.5...126.5) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 47...55 Testing:

1st rack travel in: 11.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1275 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 28...36 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 : 480...540 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed : 400 rpm Rack travel in mm : 5.80...6.00

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3915962

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10, cam rotation angle after start of delivery, cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DEE 7,6 c 6 : 07.04.89 Test sheet Edition Replaces : 30.9.88 Test oil : ISO-4113 : 9 400 230 117 Combination no. Injection pump Pump designation : PES6A95D41ORS2522-2 EP type number : 9 410 230 032 Governor : RSV425...1100A2C2161 Governor design. : 9 420 234 183 Governer no. Customer-spec. information Customer : JOHN DEERE : 6466TR20 Engine 1st version kW : 110.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. _, C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 125...145 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0.6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

Test pressure, bar: 27...29 Prestroke mm : 1.85...1.95 : (1.80...2.00) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 8.80...8.90 Del.quantity cm3/: 8.7...8.9 100 s: (8.5...9.1) cm3 : 0.3Spread 100 s: (0.6) rpm : 425.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 .rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 600 Del.quantity : 87.5...89.5 1000 : (85.5...91.5) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version

BEGINNING OF DELIVERY

Control lever position degrees: 48...56 Testina: 1st rack travel in: 7.80 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1200 4th rack travel in: 1300 rpm : 0.30...1.30Speed LOW IDLE 1 Control lever position degrees: 24...32 Setting point w/out bumper spring rpm : 425 Rack travel in mm : 4.4 Testina: Speed rpm : 100 Minimum rack trave: 19.00 : 425 Speed rpm Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 : 565...625 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 8.80...8.90 2nd speed rpm : 700 Rack travel in m: 9.90...10.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 240 mm : 9.60...9.70 Speed rpm Pressure Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 200 Rack travel in m: 9.10...9.50 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 600 rpm : 700 Del.quantity cm3/: 98.5...101.5 1000 s: (96.0...104.0) Aneroid pressure h: -

Speed rpm Del.quantity cm3/: -

1000 s: (72.0...80.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.80 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32013

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 16, cam angle after start of delivery cyl. 1

Starting/full-load transition speed from holding magnet = 450 1/min.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 7 : 07.04.89 Edition : 30.9.88 Replaces : ISO-4113 Test oil

: 9 400 230 118 Combination no.

Injection pump

Pump designation : PES6A95D410RS2522-2

EP type number : 9 410 230 032

Governor

: RSV425...1100A2C2161 Governor design.

: 9 420 234 184 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6466TRW-06

1st version kW : 98.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ., C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 135...155

Test nozzle holder

: 1 688 901 017 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 1.85...1.95 Prestroke mm : (1.80...2.00)

Rack travel in mm : 10.50

: 1- 5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 8.20...8.30

Del.quantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
Aneroid pressure h: 600
Del.quantity : 79.0...81.0

Del.quantity : (9.0...83.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testina: 1st rack travel in: 7.20 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1200 4th rack travel in: 1300 Speed rpm : 0.30...1.30LOW IDLE 1 Control lever position degrees: 27...35 Setting point w/out bumper spring rpm : 425 Rack travel in mm : 4.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 425 Speed rpm Rack travel in mm : 4.30...4.50 Rack travel in mm : 2.00 : 590...650 Speed mar Torque control curve - 1st version t speed rpm : 1100 Rack travel in m: 8.20...8.30 1st speed rpm : 700 2nd speed Rack travel in m: 9.20...9.40 Compensator Test : 500 rpm hPa : 213 : 9.20...9.30 1/min: 500 Rack travel in m: 8.80...9.00 Rack travel in m: 8.80...9.20

TORQUE CONTROL Aneroid/Altitude 1st version Setting Speed Pressure Rack travel mm Measurement Speed 1st pressure hPa : -2nd pressure hPa : 193 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 Speed rpm : 700 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Aneroid pressure h: -: 500

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.20 rpm : 1145...1155 Speed

STARTING FUFL DFLIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...180.0 1000 s: (155.0...185.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

: 425 Speed rpm Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: JOHN DEERE # RE31629

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 16, cam angle after start of delivery cyl. 1

Starting/full-load transition speed from holding magnet = 450 1/min.

APPLICATION

Tractor (tractor engines)

Speed

rpm

Del.quantity cm3/: -1000 s: (69.5...77.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 b 4 : 07.04.89 Test sheet Edition Replaces Test oil : 1.9.88 : ISO-4113 Combination no. : 9 400 230 119 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 028 Governor Governor design. : RQV350...1250AB1235R Governer no. : 9 420 231 020 Customer-spec. information : C.D.C. Customer Engine : 6 CT-830 1st version kW : 157.0 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. , C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance $+ - \dots : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 12.5...12.7 100 s: (12.3...12.9) Spread cm3:0.3100 s: (0.6) rpm : 350.02nd speed Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 travel mm : 8.40...8.50 2nd speed rpm : 1500 travel mm : 9.10...9.30 3rd speed rpm : 350 travel mm : 0.70...1.10 4th speed rpm : 450 travel mm : 1.60...2.00 5th speed rpm : 250 : 0.10...0.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm: 1550 Rack travel in mm: 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed

Test pressure, bar: 27...29

N23

per values

BEGINNING OF DELIVERY

Aneroid pressure h: 700 : 125.0...127.0 Del.quantity 1000 : (123.0...129.0) : 3.50 cm3 Spread : (6.00) 1000 RATED SPEED 1st version Control Lever position degrees: 41...49 Testing: 1st rack travel in: 10.90 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 Speed rpm : 1405...1435 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 9...15 Setting point w/out bumper spring rpm : 350 Rack travel in mm : 5.2 Testing: Speed rpm : 250 Minimum rack trave: 7.80 rpm : 350 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 350...500 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version st speed rpm : 1250 Rack travel in m: 11.90...12.00 1st speed rpm : 750 2nd speed Rack travel in m: 12.30...12.50 rpm : 1200 3rd speed Rack travel in m: 11.90...12.00 4th speed rpm : 800 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure : 12.30...12.50 Rack travel mm Measurement 1/min: 500 Speed

N24

1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 200 Rack travel in m: 9.80...9.90

3rd pressure hPa : 390

Rack travel in m: 11.20...11.60 START CUT-OUT 1/min : 270 (280) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.quantity cm3/: 128.0...132.0 1000 s: (126.0...134.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 61.5...65.5 1000 s: (59.5...67.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm : 14.60...14.80 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: : C.D.C. # 3912636

Start-of delivery mark/lock = 7.5, angular displacement of the cam after start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: IHC 5,9 b 1 : 07.04.89 Test sheet Edition Replaces Test oil : 15.6.88 : ISO-4113

Combination no. : 9 400 230 121

Injection pump

Pump designation : PES6A95D32ORS2750 EP type number : 0 410 896 906

Governor

Governor design. : RQV350...1350AB1236-

: 9 420 231 022 Governer no.

Customer-spec. information : NAVISTAR Customer

Engine : MARS DT 360

1st version kW : 126.0 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. , C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 110

Opening

: 250...253 pressure, bar

Orifice plate

diameter mm : 0.5

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ... : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4

Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400 travel mm : 8.50...8.50

2nd speed rpm : 1500

: 9.30...9.50 travel mm

rpm : 350 3rd speed : 1.00...1.00 rpm : 450 travel mm

4th speed

travel mm : 1.90...2.40

5th speed rpm : 250

: 0.10...0.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1535 Rack travel in mm: 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900 : 73.0...75.0 Del.quantity 1000 : (71.0...77.0) : 3.50 Spread cm3 1000 RATED SPEED 1st version Control Lever position degrees: 45...53 Testina: 1st rack travel in: 10.10 rpm : 1415...1445 Speed 2nd rack travel in: 4.00 rpm : 1530...1540 Speed 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 8...16 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.3 Testing: beed : 250 rpm Minimum rack trave: 7.80 : 350 rpm Rack travel in mm : 5.20...5.40 Rack travel in mm: 2.00 CONSTANT REGULATION rpm : 350...500 Spead Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 11.10...11.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90 2nd pressure hPa : 320 Rack travel in m: 9.90...10.00 3rd pressure hPa : 230 Rack travel in m: 9.20...9.60 START CUT-OUT

1/min: 290 (300)

Speed

N26

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/ : 55.5...59.5 1000 s: (53.5...61.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.10 Speed rpm : 1415...1445 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 125.0...145.0 1000 s: (120.0...150.0) Rack travel in mm: 20.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: : NAVISTAR : # 1811834092 Limit shutoff stop screw to 1.0 mm.